VOL. 7 WINTER • 1950 NO. 1

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News Items from the Provinces

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CALGARY SECTION

Our new officers for the coming year are:

President: Mr. E. Wheeler, Holy Cross Hospital.

Vice-President: Miss J. Forbes, Associate Clinic.

Secretary-Treasurer: Miss A. MacNeil, Colonel Belcher Hospital.

Focal Spot Distributor—Mr. E. S. Hoare.

Sub-Editor of Focal Spot: Miss L. Shearer, Radium and X-Ray Institute.

Lectures on Anatomy, by Dr. T. A. Bell, are being well attended, with many of the students as well as Medical Secretaries taking advantage of these lectures. They are now being held on Monday evening only.

The annual Christmas party was held December 22nd at the Officers' Mess, Mewata Barracks. Cocktails served at 6.30 p.m. Mayor Don. MacKay was guest speaker. After the banquet he lead a sing-song, in which everyone joined. Greetings were brought by Dr. J. K. Mulloy, Medical Superintendent, Colonel Belcher Hospital. Congratulations were extended to Mr. H. M. Welch on his election to the Presidency of the C.S.R.T.

There have been a few changes. Bob Bushnell, who recently passed his R.T. exams, and Foss Boulton, R.T., both from the Colonel Belcher Hospital, have accepted new positions —Kimberley and Penticton, B.C., respectively.

Another of our technicians, Eileen Shortt, from the Calgary General Hospital, is now on staff at the Colonel Belcher Hospital.

Mr. H. M. Welch and Mrs. Welch attended the annual banquet and dance in Edmonton at the end of November—reporting a very successful and enjoyable evening.

Mrs. Lois Quigley, who has been on staff at the Radium and X-Ray Institute for the past year, is now back in Saskatoon.

We have a new student member of the Calgary Society who is enrolled at the Colonel Belcher Hospital—Doreen Calvert.

—LORRAINE SHEARER, R.T.,
Sub-Editor.

EDMONTON SECTION

On November 3rd, 1949, the Kingsway Legion Hall was the scene of a Hobo Hop, when the technicians and their friends gathered in hard-time style to dance. At the bar, the social committee and their helpers were kept busy selling cokes and doughnuts. It was a most successful evening—amid cowboy hats, plaid shirts, patches and split seams.

The technicians held their monthly meeting at the Misericordia Hospital on November 14th, 1949. After the business session Mr. Godwin presented lantern slides on the femur and hip joints. These were in color and very interesting and instructive. The new X-Ray Department of the hospital was visited, followed by an enjoyable lunch served by the Misericordia Technicians.

The annual banquet and dance of the Edmonton Society was held at the Corona Hotel on November 26th, 1949. The banquet tables were adorned with flowers, and original place cards with a program enclosed. After a delicious dinner, Dr. Malcolmson introduced the guest speaker of the evening, Dr. Rowan, of the University of Alberta. Dr. Rowan delivered a very interesting talk on bird and animal life. Among the honored guests were the C.S.R.T. President, Mr. H. M. Welch, and Mrs. Welch. Dr. Mallett presented the graduating technicians with certificates from the Society. Miss Margaret Fergstad was valedictorian for the graduates. After the banquet everyone joined in the dancing, and all had a wonderful time.

The December meeting was held at Dr. Verchomin's office. The election of officers for Edmonton took place. For the 1950 term, Miss Ruth Shultz is the President, Mr. Jack Bateman, Vice-President, and Mr. Roy Hendra is Secretary-Treasurer.

We are pleased to welcome to our Society two new members, Mr. Bill White and Mr. Nick Jochiam.

—MARIE LACEY, R.T.,
Sub-Editor.

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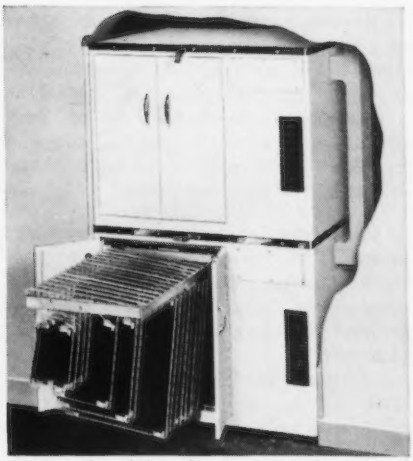

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BRITISH COLUMBIA SOCIETY OF X-RAY TECHNICIANS

The November meeting of our Society proved to be a disappointment as only a handful of members turned out for it. The meeting was addressed by Dr. Campbell of St. Paul's Hospital, who gave an interesting talk on Nasal Sinuses and Mastoids. Mr. Stirling moved a hearty vote of thanks to the doctor and expressed regret that so few had been present.

The December meeting was held on December 8th to discuss the new constitution being drawn up for the Society. Mr. Stirling, Chairman of the Constitution Committee, gave a report on the progress made on this huge task. However, the final draft has not been completed and this will come before the meeting to be held in January. As soon as the new constitution is approved the election of officers for 1950 will take place. Refreshments were served as usual after the meeting. Plans and a progress report on the forthcoming convention were given by the co-chairmen.

Erratum: We regret that the name of Miss Harrison appeared in the October issue as the co-chairman of the convention committee. This should have been Miss Pat Rogers. Apologies to all concerned.

The Annual Dance of our Society was held on December 10th and was a howling success. Nearly three hundred members and friends turned out for this event. Many radiologists were in attendance and all were unanimous in their praise for the efforts made to make the dance not only a social success but a financial one as well. Mr. Jack Blair and his committee are to be congratulated on a job very well done. The convention fund got a nice boost from the profits accruing. This is only the forerunner of many events of a like nature to swell the convention funds and we expect the other events to be equally successful.

VICTORIA NOTES

Dr. I. C. C. Tchaperoff addressed the Victoria group on the subject of Tomography. This proved to be a very interesting and absorbing topic and the members thoroughly enjoyed themselves. Many films were on display to show the different types of films that are necessary for different conditions. Mr. Cliff Brown moved a hearty vote of thanks to Dr. Tchaperoff for his splendid address. Refreshments were served at the close of the meeting.

HEAR AND THERE

Congratulations to Dr. and Mrs. F. H. Bonnell of Victoria on the birth of a daughter.

Mr. Jerry Saunders of Victoria won a couple of prizes in the D.V.A. Bowling League for high scores. Good going, Jerry!

Mrs. Gwen Drage of Salmon Arm has commenced training in the Irving Clinic in Kamloops.

Miss M. McCurdy has started ax X-ray Technician with the Burris Clinic in Kamloops.

The Convention Committee are working hard toward making the convention a success. All members are hereby asked to lend their assistance when requested to do so.

Thanks to the members of the present executive who are carrying on until the new constitution is approved and new officers nominated and elected.

If any member wishes to make any remarks about the weather I would like to inform them that this magazine article gets censored.

We would like to extend our sincere congratulations to the following members who successfully passed the November examinations:

Miss E. Blake.
Miss Emily Thompson, R.N.
Miss Mary McKinnon.
Miss Audley Haack.
Miss Daphne Mangin.
Mr. B. Gagnon.
Mr. F. C. Barker.

All the above members will be pleased to get this information and also the disturbing news that as Ordinary Members their dues will take on a different aspect. Good luck, anyway!

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—W. Q. STIRLING, R.T.,
Sub-Editor.

(*Continued on page 7*)

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(*Continued from page* 4)

MANITOBA SOCIETY OF X-RAY TECHNICIANS

The Fall activities of the Manitoba Society were a little delayed but we finally got off to a good start in October. Dr. R. A. Macpherson presented a most interesting and informative talk, "The Discovery and Early Development of the Roentgen Ray." Points of special interest were illustrated with excellent sildes.

The November session took the form of a dinner meeting. Mr. J. McTavish of Firestone Tire & Rubber Company presented an excellent technicolor film on rubber plantations and community life in Liberia, Africa. As technicians we were particularly interested in the shots of the very modern hospital and x-ray equipment.

At this meeting it was decided that every second month we would hold a dinner meeting. The alternate meetings will be held at the various clinics. It is hoped that this plan will attract a larger attendance of members.

At the December meeting the election of officers for 1950 was the main point of business. Due to the efforts of the Nominating Committee we have an excellent slate of new officers: President, Mrs. Olga Backhouse; Vice-President, Miss Margaret Krietz; Secretary-Treasurer, Mrs. Mina Stewart. Congratulations to the new Executive and many thanks to the retiring officers for their hard work during the past year.

Under the new Executive we got off to a flying start in January with a dinner meeting in the club rooms at the Medical Arts. There was a good turnout of members to hear Dr. James Passalis, who spoke to us on "Paralleling Technique in Dental Radiography." He showed how the long-cone parallel technique produces a radiograph of truer proportions, less magnification and distortion, than the Bisector technique. Dental radiography is something that can be improved upon in most X-Ray Departments and we found Dr. Passalis' talk most instructive.

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Mrs. Claire Watson presented a paper on "The Relation Between Technician and Patient." She stressed the importance of being sympathetic and understanding towards the patient.

As a new feature of this year's meetings, questions of the 1949 examination papers will be answered by a recent graduate. This should be of benefit to both students and graduates. Miss Betty Robb answered very completely a question on therapy from the November examination paper.

Plans are now afoot to honour the 1949 graduates at a banquet and dance. The "do" will be held at the Marlborough Hotel, February 2nd. The Minister of Health, Hon. Ivan Schultz, will bring the main address and Dr. R. A. Macpherson will address the Grads.

—CATHERINE COULSON, R.T.,
Sub-Editor.

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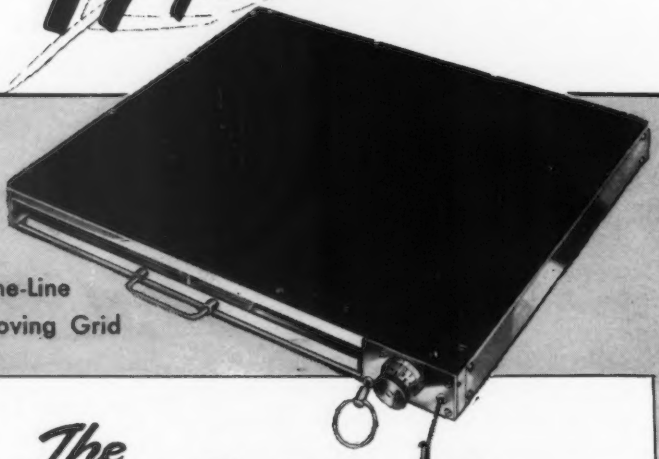

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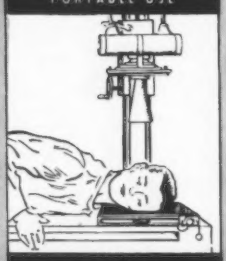

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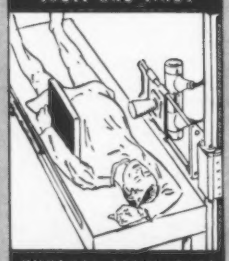

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The Focal Spot

Journal of the Canadian Society of Radiological Technicians

EDITOR
LESLIE J. CARTWRIGHT, R.T.

Volume 7 TORONTO WINTER 1950 *Number 1*

"All our ambitions should be devoted to a faithful fulfilment of duties towards others as well as to ourselves."—Roentgen.

Dental Radiography

By DAVID C. SAGE, R.T.
McGregor Clinic, Hamilton, Ontario

TO the average technician radiography of the teeth is perhaps of little interest. There are reasons for this, of course. First, perhaps, is the difficulty of getting a nearly perfect projection, and second, the annoyance of the so-called wet mouth, when you end up with a very slippery packet and fingers dripping with saliva. The patient who gags when a film packet is placed anywhere near the molar region and insists on coughing the film completely out of his mouth in the middle of the exposure does not help to make things any easier. Unfortunately a trained technician is required to get as good an end-result in the work he is least interested in as in the work he may otherwise prefer. There are many important reasons why we should give the radiologist and dentist a dental radiograph which is free of distortion, elongation, bony overlap and is of the highest quality in detail.

Development of Teeth:

Throughout life man will normally have two sets of teeth, first the deciduous or milk teeth, and then a permanent set. The deciduous teeth start development about the sixth week of foetal life, begin eruption some six months after birth and within two years are complete by twenty in number, ten in each jaw. Calcification of the permanent teeth proceeds in the following order in the lower jaw: first, molars at birth, incisors and canines about six months later, premolars at the third year or later, second molars about the end of the fourth year, the third molars about the tenth year. In the upper jaw they take slightly longer. The eruption of these teeth begins at the sixth year, pushing out the deciduous teeth, and should be complete by twenty-five years of age. There are thirty-two permanent teeth, sixteen in each jaw. Towards the sixth year, before any of the deciduous teeth are shed, there are twenty-four teeth in each jaw, viz., the ten deciduous teeth and the crowns of all the permanent teeth except the third molars. Very often the third molars will not erupt due to faulty growth and may become impacted with the second molars.

Terminology:

Now that we have familiarized ourselves with what we may expect to see when doing dental radiographs for patients from one to twenty-five years of age, let us assume we have a patient with a complete set of erupted permanent teeth. First of all it is important to know the terms when describing positioning for teeth since medial and lateral, anterior

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and posterior, cannot be properly applied to all teeth in the same sense, owing to the curvature of the dental arches.

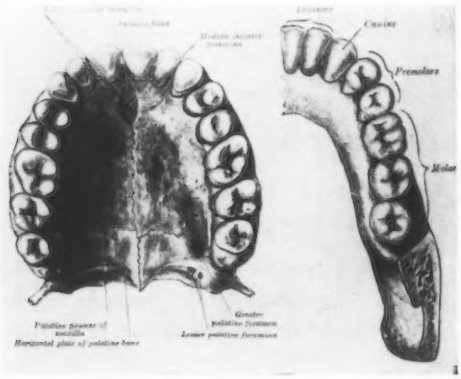

Fig. 1.

Median line — the anterior - posterior line of the body.

Mesial—toward the mid line of the dental arch.

Distal—surface of teeth most distant from the medial line.

Disto-mesially—a direction from the distal to the mesial.

Distal-oblique—directing the rays forward and downward.

Lingual—the surface of the teeth toward the tongue side.

Labial—toward the lip in the anterior region.

Labio-lingually—a direction from the lips towards the tongue.

Buccal—surface of posterior teeth toward the cheek.

Bucco-lingual projection — a direction from the cheek toward the tongue.

Interproximal space — the triangular-shaped space bounded by the proximate surfaces of the adjacent teeth and the crest of the alveolar ridge between their necks. Normally this space is filled with gum tissue.

Proximate contact — the contact or touching of the proximal surfaces of adjacent teeth.

Horizontal angle—projection of the radiation in a horizontal plane around the jaws. Controls overlapping of the teeth.

Vertical angle—the angle at which the rays strike the long axis of the teeth or film. Controls elongation and foreshortening.

Radiographic Considerations:

A dental radiograph of a tooth or teeth which is anatomically accurate, that is to say, free of distortion in size, shape and detail, with no bony overlap or obscuring structures, and well opened inter-dental spaces, is one which will afford the radiologist and dentist the greatest information. The controlling factors which determine accuracy in dental radiography are of prime importance and should always be kept in mind. (1) One should make use of the smallest focal spot available to provide the sharpest detail (2) Use as great a target-film distance as is practical. The greater the distance, the less distortion of the true shape and size, and the greater the detail. It has been found that a distance of 14 to 20 inches is quite adequate. A dental cone 14 to 20 inches long is a great asset in standardizing the distance used. It can be used for sighting to get proper alignment, and to provide greater detail by limiting the field. (3) Direct the central ray through the apices of the teeth. (4) Film should lie as close to the teeth as possible. (5) Film should not be allowed to bend when placed against the jaw as this would cause distortion.

(6) The long axis of the film should be placed so that it is parallel to the long axis of the teeth, to provide anatomical accuracy. This can be done only with film holders designed specifically for this

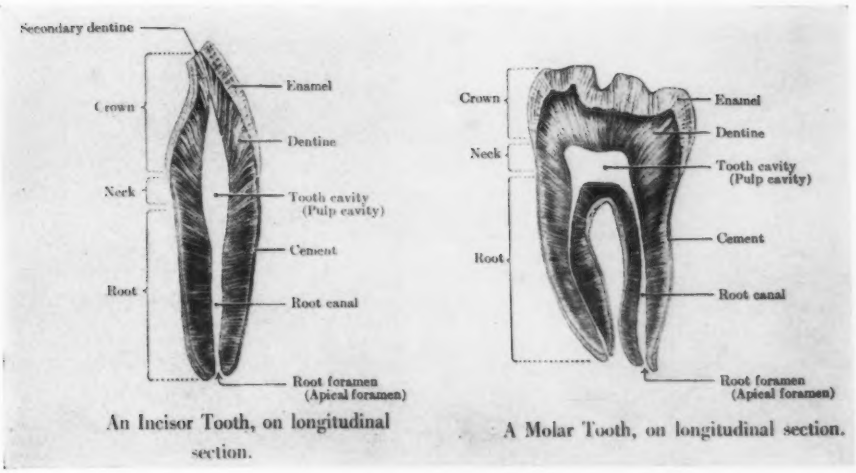

Fig. 2. Cross Section of a Tooth.

purpose and/or with the use of cotton rolls. (7) When the film is made parallel to the teeth, then the central ray should be directed perpendicular to these two parallel planes.

To enhance the quality of the dental film a diaphragm made of a thin lead disc with a hole in the centre and placed inside the cone proves to be a big factor. The purpose, of course, is to cut down the secondary radiation and therefore increases contrast with greater detail. The size of the aperture depends on the distance used and accuracy of alignment.

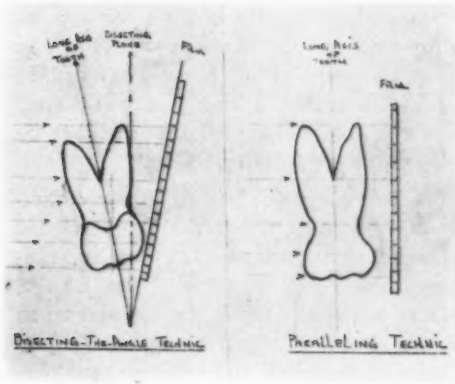

Fig. 3a. Fig. 3b.

Tube Angulation:

The vertical and horizontal are the two angles referred to in the place at which the central ray is directed at the teeth. The vertical angle is the angle between the central ray and the long axis of the tooth and controls the elongation and foreshortening of the image. Because it is impossible to accurately judge the angle at which the teeth are set within the bone and tissue of the jaws, the vertical angle has been the greatest problem in dental radiography. There have been at least two popular methods devised in an effort to alleviate the difficulty and both are widely used. The first, introduced in 1907 and known as "Bisecting-the-Angle Technique," is to direct the central ray perpendicular to the imaginary line that bisects the angle formed by the long axis of the tooth and the film packet. This bisecting line was determined by a study of the cross section of the tooth. There are, however, obvious reasons why it is impossible to record a true anatomical image of the tooth on a dental film by

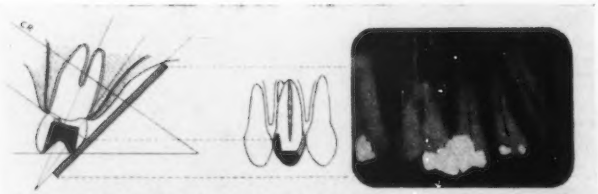

Figure 4—*Left, angle of projection of central ray (CR) for periapical examination; center, drawing of image; right, radiograph—no cavity shows in second bicuspid*

Figure 5—*Left, angle of projection of central ray (CR) for Bite-Wing examination; center, drawing of image; right, radiograph—note cavity in upper second bicuspid*

Figs. 4 and 5.

this method. First of all, we know there are no two sets of teeth alike and what would be the proper angle for one set would be wrong for another. Even the most highly trained technician with a good knowledge of mouth types cannot project a central ray perpendicular to an imaginary plane. Secondly, as the theory was originated from a simple theorem in geometry dealing with lines and angles, when the object which represents the lines or sides of the angle takes on width, the idea automatically becomes greatly distorted, so that even when the central ray is made perpendicular to the bisecting plane, it is still striking the tooth at an angle, resulting in a distortion which is increased with the angle.

(Fig. 3A.)

This demonstrates the fallacy in bisecting-the-angle technique, taking an upper molar with roots equal in length. It is clearly shown how the root will be improperly recorded, the one nearest the tube foreshortened, the other elongated. The cemento-enamel junctions of the buccal and lingual surfaces of the crowns fall on different points on the film, the occlusal surfaces of the crowns are not in profile.

(Fig. 3B.)

A second method, which has been more recently devised, is to parallel the film to the long axis of the teeth and project the central ray perpendicular to these parallel planes. This is the only way in which anatomical accuracy can be produced. The diagram on the slide illustrates the principle of this theory. As mentioned before, the film should not be allowed to bend when pressed against the jaw. Obviously, a bent film will distort the true size, shape of the tooth either by elongation or foreshortening.

To overcome this hazard, Albert Bradison of Berkeley, California, has designed a metal film holder with a soft radiolucent rubber roll attached. The film is placed in the slot under the roll and when in position will touch along the lingual aspect of the teeth. The holder thus performs two duties by keeping the film

By DAVID C. SAGE, R.T.

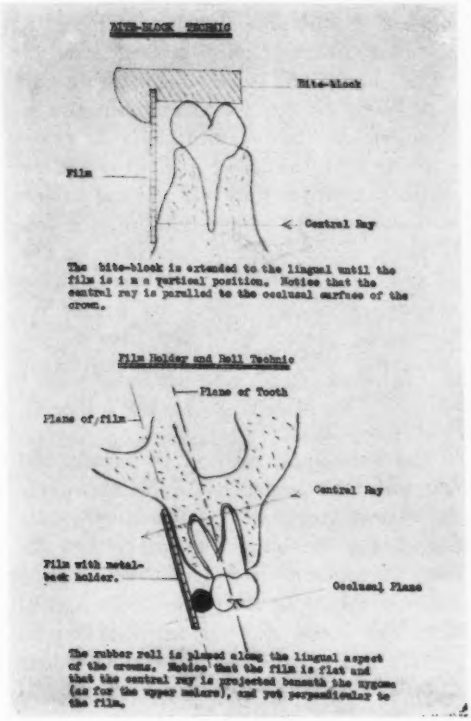
BITE-BLOCK TECHNIC
Bite-block
Film
Central Ray
The bite-block is extended to the lingual until the film is in a vertical position. Notice that the central ray is parallel to the occlusal surface of the crown.
Film Holder and Roll Technic
Plane of Tooth
Plane of film
Central Ray
Film with metal-back holder.
Occlusal Plane
The rubber roll is placed along the lingual aspect of the crowns. Notice that the film is flat and that the central ray is projected beneath the zygoma (as for the upper molars), and yet perpendicular to the film.

Fig. 6.

from bending and holding the film away from the crowns of the teeth so that it will be made parallel to the long axis of the teeth. These rolls come in three sizes to compensate for the variations in the inclination of the teeth and their supporting bone and tissue. Cotton rolls may also be used to good advantage in place of the rubber rolls.

The horizontal angle is the angle formed by the central ray with the occlusal axis of the teeth and is correct only when the central ray opens up the interproximal spaces of the teeth with no overlapping of crowns or lateral distortion of teeth. The posterior proximal contact surfaces of the teeth run in a mesio-distal direction so the radiation must be directed mesio-distally to pass through the proximal surfaces.

For a mouth where the teeth are crowded it is often necessary to take additional views to open up the proximating surfaces. (Fig. 1.)

Central Ray Projection:

When x-raying one tooth, the central ray should be in line with a line running from the apex of the root to the crown and when for two teeth, the central ray should project through the interproximal space. This will ensure the correct horizontal angle. Also the central ray should be directed through the apices of the teeth in all periapical radiographs as it is in this area we wish to have the greatest detail.

Common Mistakes:

(1) Improper film placement which may involve placing film at an angle giving an uneven black border or leaving too wide a border on the film beyond the occlusal surfaces. The latter may result in cutting off the root areas. (2) Improper holding of film by patient can result in a distorted image. If the film is pressed into incisal edge of the teeth instead of into the root, it will easily pivot away from the gum area, showing an elongated tooth which may be mistaken for an error in angulation of tube. Also with the root-film distance increased, detail will be decreased. Always use tube and cone for sighting as you would sight with a gun. The horizontal surface of the tube may also be used in sighting when paralleling the horizontal angle for proper alignment to film.

Narrow Anterior Films:

It is impractical and in most cases impossible to make use of the metal back

holder and roll if using the larger 1¾ by 1¼ packet in the anterior regfion due to the constricted arches in this area. Two narrow anterior films are now available, the Eastman Ultra speed and the Bolin Lightning Speed with mounts that will accommodate these narrow type films.

Starting Point:

The very first step to take before attempting any dental exposure is to wash the hands thoroughly, and, if at all convenient, within sight of the patient. If a basin is not located in the same room, make it a point to ask the patient if he would wait a couple of minutes while you wash your hands. This should start him off in a happier frame of mind. The next step will be to position the head so that the occlusal plane is parallel to, and the mid-sagittal plane perpendicular to the floor. As the head will tend to move when placing film, it should be re-adjusted before each exposure. For the upper jaw the central ray should project at the level of a line drawn from the ala of the nose to the tragus of the ear, thus passing through the apices of the roots. For the upper centrals, the central ray should be directed through the tip of the nose. In the lower jaw the central ray should project at a line ½ inch above the inferior border of the mandible for the male, and ¼ inch for the female patient. For the lower centrals direct the central ray slightly higher due to the shortness of teeth and to avoid superimposition of the mental symphysis over the central roots.

When taking a full mouth x-ray, always start with the anterior teeth, working back to the molar region. This will accustom the patient to the film and routine before it is placed in the sensitive and difficult posterior areas. If we start in the molar region by sliding the film along the lingual tissue as far as required, it will give the patient a feeling the film is being slowly pushed down his throat and often cause considerable gagging, plus discomfort throughout the remainder of the examination. I prefer starting with the lower jaw. It is the less difficult both for yourself and the patient and you can go along without any loss of time. Several techniques may be employed in making satisfactory radiographs of the lower arch by use of the bite-block, cotton rolls and film holder, the latter two having been previously described.

(Fig. 6.)

The bite-block method is simple and fast although it can be used improperly in various ways. (1) When properly placed, the film should set parallel to the teeth as shown in Fig. 6. (2) For a shallow mouth it may be necessary to keep the block away from the lingual surface of the gum tissue to some extent in order to get the film down far enough to include the entire root in the anterior regions. (3) The film should not be forced into the lingual surface of the crowns in the anterior and bicuspid regions, causing film to bend with resulting distortion. The block should be extended more to the lingual, keeping the film clear of the curvature of the arch to prevent the film from bending.

Lower Central and Lateral Incisors:

(1) With the long axis of the teeth perpendicular to the floor, place a narrow anterior film vertical in the mouth, the rubber roll or No. 4 Cotton Roll, whichever is chosen for use, lying along the lingual aspect of the two central incisors. (2) Make sure lower edge of film is beneath the tongue. (3) The patient may hold the film my pressing the index finger

firmly against the lower central portion and biting finger gently to stabilize. (4) project central ray through the interproximal space to centre of film. (5) For proper horizontal angle direct central ray perpendicular to the incisal edge of the two centrals. (6) For proper vertical angle direct the central ray perpendicular to the long axis of the film. (7) The tube should not be centred too low for this area for the reasons mentioned before. One-half inch above the inferior border of the mandible is adequate. (8) When placing film for all regions be sure the black dot appears in the ⅛ inch border beyond the incisal edge of the teeth.

Lower Cuspid Region:

Similar technique as for the incisors, centring film to the cuspid tooth, central ray perpendicular to film packet through apex of root ¼ inch above inferior margin of the mandible for vertical alignment and perpendicular to labial aspect of the tooth for horizontal angulation. There may be a tendency here to direct the central ray too mesio-distally, resulting in over-lapping the cuspid and bicuspid. The lower cuspids are directly down from the ala of the nose. The bite-block method may be employed for the cuspids and incisors as the mouth relaxes when closed on the block, permitting the film to go down deeper.

Lower Bicuspid Region:

As this is the most painful region for the patient, he may tilt his head to one side or another, in which case it will be necessary to make certain the mid-sagittal plane is perpendicular to the floor before exposing. The bite-block technique with the larger film in horizontal position is best used for lower bicuspids, unless the teeth are unusually long. In this projection do not hesitate to move the film away from the lingual aspect of the teeth, bringing the film to a deeper portion of the mouth and thus avoid the need for bending. This will allow the film to get below the apices of the roots. It can be moved mesially to include the cuspid tooth. The block is placed directly over the first and second bicuspids and never to the distal of the second bicuspid. If the teeth are very long and not adequately shown with the film horizontal, place the film vertical, using the metal back and a No. 4 Cotton Roll along the centre of the film, film wall to the lingual and parallel to the long axis of the teeth. The index finger is pressed diagonally across the back of the film and extended down to the lower edge. The central ray is directed through the two bicuspids and perpendicular to the film, both for the vertical and horizontal angles. There is a slight bucco-lingual inclination of the lower first bicuspid which may be misleading due to the marked curvature of the buccal bell. However, the long axis of the tooth is nearly perpendicular to the long axis of the horizontal film.

Lower Molar Region:

Large film horizontal in mouth. This is the only region in the mouth where the film is parallel to the long axis of the teeth without the use of cotton or rubber rolls. The bite-block or index finger are both easily used to retain the film. In making use of the index finger, again observe that the film is held near the lower margin so that it will be closer to the roots and also in a more vertical position. The central ray through the second molar and perpendicular to film for the vertical angle and perpendicular to the film or to the buccal surface for the horizontal angle. If there is an impacted or unerupted third molar which does not include the roots on the routine projection

an additional view is necessary. The film is placed to the back of the mouth as far as possible and the central ray directed from the distal to the medial through the third molar through the roots onto the film.

It is often very important for the dental surgeon to know the linguo-buccal position of an impaction. That is to say, whether the crown of the impacted tooth is to the lingual or to the labial (in front of, or behind), the contacting tooth in the normal alignment. Various methods may be employed to determine this. One, and perhaps the most convenient, if properly carried out, is to make two exposures on different films in similar position; the first exposure a standard projection and the second made with a horizontal tube-shift either to the left or to the right. The films are properly marked for identification and on viewing, if the tooth appears to have moved in the same direction as the tube it means the crown of the impaction is to the lingual, but if it appears to have moved opposite to the tube, then it is to the labial. This method is based on the principle of vision. If you place yourself in line with some object and a tree, then move either to the right or left, if the object moves in the same direction as you, it is behind the tree. It will be in front of the tree if it moves in the opposite direction. This method has its limitations since it does not give the exact position. Another method is to use either an occlusal or standard size film placed in the mouth with the front of the film toward the occlusal surface of the left molars and as far back as possible, patient biting down to hold in position. The head is tilted back until the film is perpendicular to the floor. The central ray through the long axis of the second molar. If projection is correct the roots of the second molar will superimpose into the crown. The only exception to this is when the impaction is above another tooth, in which case it will be superimposed over the tooth in normal alignment. In every instance, the appearance of the teeth in normal position in the involved area is a guide in checking the accuracy of the projected rays. The pulps of the teeth in this region must appear as black dots within the crowns, which indicates the rays are projected through the long axis of the teeth.

Upper Central Region:

Narrow anterior film placed vertically in mouth, using film holder with the rubber roll or No. 4 cotton roll lying along the lingual aspect of the two central incisors. Centre film to interproximal space of the two centrals, 1/8 inch border below the incisal edge, film is held into position with the thumb placed high up near upper edge, index finger resting on cheek to stabilize. The occlusal plane of the teeth is made parallel to the floor and mid-saggital plane perpendicular. The central ray is projected through the tip of the nose, the vertical angle made perpendicular to the film and long axis of the tooth as previously shown on sketch. The horizontal angle is also made perpendicular to the film packet and the two central teeth.

Upper Central—Lateral Region:

Same technique is used as for centrals, centring film to the interproximal space between the central and lateral incisor, held into place with opposite thumb, index finger resting on the cheek, central ray is directed through the line from the tragus of the ear to the ala of the nose.

Upper Central—Cuspid Region:

Procedure as for centrals and central-laterals, narrow anterior films again used due to the curvature of the arch in the

anterior region, film centred to the interproximal space between the central incisor and the cuspid. When there is a space between the film and the incisal edge of any of the upper anterior teeth, the film is usually in the proper position and indicates the upper portion of the film is in contact with the palate. The horizontal angle is often incorrect in this region for there is a tendency to direct the central ray too much mesio-distally, resulting in heavy overlapping of the cuspid and bicuspid, the first bicuspid being wider bucco-lingually than the cuspid.

Upper Bicuspid Region:

The large posterior film is placed in the film holder and the rubber roll or No. 4 cotton roll adjusted so that it will lie along the lingual aspect of the crowns when film is placed horizontally in the mouth. Centre of the film is centred to space between the two bicuspids and is held by the opposite thumb, index finger resting on the cheek for stability. The central ray through the apices of the teeth on tragus-ala line, perpendicular to the film packet and the long axis of the teeth between the two bicuspids. Tip of the cone is placed in front of the zygoma just below the pupil of the eye. If the bicuspids are exceptionally long, place the film vertically. In the horizontal angle, project the central ray between the contact points of the two bicuspids; this requires a slight mesio-distal direction of the rays. If an unobstructed view of the first molar in the bicuspid radiograph is desired, use a slight increase in the mesial-oblique projection of the central ray; this will cause the molar process to be thrown to the distal of the first molar and give an unobstructed view of the first molar along with the bicuspids.

Upper Molar Region:

For this region we have our greatest difficulty in making satisfactory radiographs and there are three reasons for this:

(1) Where there is a low system and flat palate, the routine lateral projection will superimpose the zygoma over the upper molar roots.

(2) The posterior curvature will often cause distortion and elongation of the second and third molars.

(3) The upper first and second molars have three roots and on a lateral projection the buccal roots will superimpose over the lingual roots, obstructing the view of the buccal roots. Thus it is necessary to take three views, a lateral, a mesial-oblique, and a distal-oblique, to afford a complete diagnosis of this region when it is required. This is accomplished by changing the horizontal angulation of the tube. In the mesial oblique view the central ray is directed mesial-distally, throwing the malar process to the distal of the first and second molars. In the distal-oblique view the central ray is directed distal-mesially between the zygomatic notch which is approximately one inch anterior to the external meatus, throwing the malar process to the mesial of the second and third molars, producing an unobstructed view of these roots. Greater vertical angle is required for the latter. The distal oblique view is also used to explore the entire molar region, useful to demonstrate an unobstructed view of unerupted or impacted third molars and will open the contact point between the second and third molars.

Head Position:

The tragus-ala line is made parallel to the floor and the head is then titled slightly toward the opposite side to aid in directing the central ray beneath the malar process. The film is held with the opposite thumb near the palatal edge and

pressure exerted upwards to prevent the film from sliding down over the posterior curve. The central ray is directed just below the malar process, straight down from the outer canthus of the eye and perpendicular to the film. Increase the vertical angle for the distal oblique projection, especially when for unerupted third molars.

Horizontal Angle:

In the lateral projection, the long axis of the tube should be parallel to the broad side of the head, or the central ray perpendicular to the buccal surfaces. For the mesial-oblique, direct the central ray mesio-distally through the contact point between the upper first and second molars. For the distal oblique projection, the central ray is projected disto-mesially between the zygomatic notch, which is approximately one inch anterior to the auditory meatus. Increase the exposure by twenty-five per cent for the distal oblique projection. To determine the linguo-buccal position of impacted teeth in the upper jaw, the same technique is used as previously described for lower impactions except that the central ray is projected through the vertex of the skull and the long axis of the teeth in their normal alignment in the area of the impaction. If the projection is correct, the lingual impactions will appear to the lingual of the dental arch, labial impaction to the labial of the dental arch. The only exception to this is when the impaction is above another tooth, and in which case it will be superimposed over the tooth in the normal alignment.

Purpose of Bite-Wing Examination:

The logical procedure in prophylactic dentistry is first to make an exacting survey of the teeth from four separate points of view, namely: (1) the enamel cap, for detection of virgin caries and recurrent decay; (2) the dental pulp, for degenerative changes, such as the formation of pulp stones, nodules, and recession caused by deposits of secondary dentin; (3) the gingival portion, for detection of absorption caused by systemic disease or local irritation resulting from over-hanging fillings, faulty contacts, deposits of serumal and salivary calculi; and (4) the apical portion, to determine the pariapical condition.

Since the bite-wing interproximal radiograph records without distortion the coronal two-thirds of the upper and lower teeth of any given region on the same film, it serves the first three of these purposes. It is superior to the periapical examination in these uses because the low vertical angle of projection and the vertical position of the flim packet permit the x-rays to pass straight through the enamel ridge and the gingival portion of the crown, thus revealing areas that are obscured in the periapical radiograph because of the high angle from which the rays are projected in making it.

These illustrate this point clearly. At the left a tooth is diagrammatically depicted as being radiographed by both types of examination; the drawings in the centre and the radiographs at the right show how cavities are hidden by intervening objects in the periapical method, but are plainly visible in the bite-wing study. As soft tissue is not necessarily required, the bite-wing packets have but one film. There is also a wing across the back of the packet on which the patient bites to hold the film properly in place. They come in four sizes, type 1 (small) for the anterior teeth; type 2 (intermediate) and type 3 (large) for the posterior teeth, and type O, a specially small film for children. Basically seven packets

are used for a full examination with types 1 and 2 film. If the oral cavity will accommodate the No. 3 type in the posterior region, five films only are required. For children three type 1 films are used for the anteriors and four type O for the posteriors.

General Technical Considerations:

In standardized bite-wing technique, the film is placed in a definite position for each region so that the plane of the packet is parallel to the vertical (long) axis of the teeth, the wing being held horizontally between the occluded teeth. The head is positioned so that the occlusal plane of the upper teeth is horizontal. The central ray is directed from eight degrees above the horizontal and straight through the interproximal spaces.

Very seldom will a dentist requisition for a bite-wing of the anterior teeth and only in very rare cases would it be necessary together with periapical films. The ocular and instrumental methods are used to better advantage for the anteriors but even this examination can fail to locate every cavity and all calculi.

Central Incisor Region:

Place Type 1 packet into lower jaw. Patient then closes the mouth until contact is made with the upper occlusal surface, mid-plane of packet in line with the central interproximal space, technical considerations as previously outlined.

Lateral Incisor—Cuspid Region:

Anterior type packet centred to the interproximal space between the lateral incisor and cuspid over the occlusal surface of the lower jaw. Have the patient bite gently until contact is made with the upper occlusal surface. Central ray through the contact point with eight degree tube tilt above the horizontal.

Bicuspid Region:

Type 2 posterior bite-wing packet is placed into the mouth and centred to space between the two bicuspids, tab held over the lower occlusal surface and the patient gently bites until contact is made with the upper teeth. Instruct the patient to bite firmly on the posterior teeth to ensure proper occlusion. Central ray through interproximal contact points with slight mesio-distal horizontal angulation, plus the usual eight degree vertical angulation.

Molar Region:

Much the same technique as for the bicuspids, centreing film to the second molar. Central ray through the contact points of first and second molars with slightly more mesio-distal horizontal angulation of tube than for bicuspids. To open the contact points between the second and third molars often requires disto-mesial angulation of the tube to the film.

Occlusal Examination:

The practical uses of occlusals have already been described to some extent together with the periapical examination. An occlusal, or ordinary size film is inserted in the mouth between the occlusal surfaces of the upper and lower teeth, tube side of packet facing the arch under observation. For the lower jaw, the central ray is projected through the vertex of the skull and perpendicular to the film. The purpose of occlusal films are for:

1. buccal-lingual relationship of teeth,
2. gross pathologic lesions,
3. impactions,
4. fractures,
5. foreign bodies.

Extra-Oral Radiography:

In dental radiography extra-oral films are usually taken to supplement the find-

ings from bite-wings, periapical and occlusal films, thereby providing more extensive information. Occasionally the condition of the patient's mouth is such that an intra-oral examination cannot be carried out. It is not my purpose to go into the detail of lateral jaw positioning, but with proper head rotation and tube alignment both upper and lower jaws can be demonstrated on 8 x 10 films, using screen technique and the Bucky diaphragm.

Profile Radiography:

This particular examination, when carried out, is used to compare the facial contours before and after dental prosthodontia, and orthodontic examination. It is usually done only for the satisfaction of the patient. In prostho-dontia, two lateral exposures are taken, one before the extraction of teeth from which a template is cut, and another after completion of the dentures; then the two radiographs are compared. In orthodontia, profile radiographs are made prior to, and during the progress of correction, giving a definite record of the results that are being accomplished.

Dark Room Procedure:

It is not necessary to expatiate here on dark room procedure for dental x-rays as the same care and technique should be given as for handling other radiographs. Time and temperature method is best. When processing periapical x-rays of the two film type, remove one set for soft tissue approximately 2½ minutes before the other, if five minute development is being used. When placing the hanger in developer, agitate slightly to remove any air bubbles on film. When doing full mouth x-rays, always follow the system of arranging films after each exposure, and then place them on the hangers in the same order. This will avoid loss of time and error when viewing wet films for possible re-takes and is very convenient when placing films on mounts.

Reduction of Over-Exposed Films:

It is difficult at times to equalize the density of all films in any individual mouth, and over-exposure may result. Reduction of over-exposed dental films is simple and usually very successful. As a matter of fact some labs purposely over-expose, then reduce all their radiographs to bring out better detail. Two solutions are made, one with one part of potassium ferrocyanide to sixteen of water, the other with one part of hyposulphite of soda to sixteen of water. The over-exposed film is placed in the first solution until the proper density is reached, then immersed in the second solution to clear, then properly washed.

Safety Precautions:

The technician taking dental films in an x-ray department that is provided with a regular dental unit usually exposes himself to considerable radiation. First of all, the unit is nearly always closed off in some small room or corner in which he must work. Secondly, the exposure switch does not provide for his being out of the room or at an assured safe distance when the exposure is made. Thirdly, close examination of the film, mouth and head is invariably necessary during the exposure. A technician should never hold a film in the patient's mouth during the exposure and should stand at least four feet away from the field, and, of course, with the tube pointing in the opposite direction. As the dosage taken into the body and hands is cumulative, it is often too late to do anything about over-exposure to radiation at the time it is made known by sight.

Concerning Anatomy

By ALBERT R. CHEFFINS, R.T.
Queen Mary Veterans' Hospital, Montreal, P.Q.

The requisition:
"Stereo views of Sella-Turcica, please."

THE technician, whose experience was of but a few months, rushed to the only text book there was in the department, a dilapidated "Gray's Anatomy," and hastily searched for a description and possibly a diagram of the Sella-Turcica. Having satisfied himself as to its purpose and location, he thought that perhaps stereo projections of the lateral skull might produce that which was required. It did! "Funny, isn't it," thought the novice, "and I've made at least a dozen of those views and never knew what I was doing."

Do we technicians really know our anatomy? Do our student technicians realize that the study of anatomy means more than the learning of the names and locations of a few bones? We do so much and yet know so little of what we have done. As a child learns to talk before it learns to read, so our technicians are so often taught to "x-ray" before they really know what they "x-ray." Students are taught positioning and techniques but only the very elementary rudiments of general anatomy. A subject which treats of the structure of the tissues of which the different parts of the body and the organs are composed, should receive more than just a passing glance. Apart from a sound knowledge of positioning and technique, a most important requisite of a first class technician, to-day, is a thorough knowledge of the construction and functions of the organs of the human body, and we, as senior technicians should see to it that juniors under our supervision are given every opportunity to gain as much knowledge of general anatomy as we expect them to gain regarding the principles of radiographic positioning and we, ourselves, should never relax in our efforts to keep up-to-date and continually refreshed concerning these matters.

Requisitions are received in x-ray departments couched in such general terms that we become familiar only with everyday usage of names given to the various members of the body, and consequently are quite at a loss when medical or technical terms are employed. The skeleton is composed of bones and ligaments that hold the bones together at the joints. In the human body there are some 200 named bones; one source gives 206; while a third, taking into account the sesamoid bones, gives consequently a greater number. To remember the name of each bone and its location may not be entirely necessary. It might be a little confusing to be asked to name all the bones of the hands and arms, especially when one realizes that there are sixty, yet our technicians so often x-ray the arms and the hands, knowing so little of the structure projected upon the films.

In the study of the skull, for instance, we are content with the word "skull," and produce the necessary routine projections, no doubt in a very satisfactory manner, but no serious thought is given to the many intricate pieces that, fitted together like a jigg-saw puzzle, make up the skull. Generally speaking, we are familiar with

(Read before the Canadian Society of Radiological Technicians at the Annual Dominion Convention held in Halifax, July 4th, 5th, 6th, 1949.)

the eight bones that form the dome and any student technician could probably name them without hesitation. For the rest we are satisfied to use such common terms as cheek bones or jaw, and have to rush to the text book should the requisition refer to the Zygomatic Arch, Maxillae or Mandible. Encased within this whole structure, technically termed the Cranium, we have that body of "Grey Matter," the brain, and the ventricles, with which we are so concerned in that branch of radiography dealing with encephalography and ventriculography. So few hospitals are concerned with the practice of encephalography that many technicians are quite unfamiliar with its routine. Nevertheless the ventricular system should not be omitted in the course of study. To outline it briefly, the Ventricular System consists of a series of cavities of various sizes in communication one with the other. The largest pair being the lateral ventricles situated on either side of the mid-line. Each lateral ventricle has an anterior and a posterior "horn." Between the laterals and on the mid-line is situated the third ventricle while immediately below is the fourth ventricle. These ventricles contain cerebrospinal fluid but are only visualized when the cerebrospinal fluid is replaced with a radio-opaque substance such as air or oxygen. In skull radiography one has to contend with the requests for visualization of certain apertures such as: the Foramen Magnum, Foramen Ovale, Foramen Spinosum, Foramina Rotunda, Optic Foramina, Internal Auditory Canal. The basal position is immediately considered as being correct for the projection of these foramina but it is not necessarily so. The proper positioning for the Optic Foramen is understood by all — but to visualize the Foramina Rotunda calls for special consideration and a basal view in this case does not suffice. The technician then, must decide which foramina can be visualized by means of a basal projection, the Stenvers or Towne positions. The Sinuses are quite regularly requested and generally referred to as Maxillary or Paranasal. We usually have a routine involving three projections, but which one of the three projections do we require for the Caldwell or Waters positions, should these names be mentioned instead of the sinus indicated? A careful study of the Mastoid processes and adjacent structures will assist materially in correctly positioning for the radiographing of these parts. We should not have to run immediately to a text book should the requisition call for a demonstration of the Mental Process, Stensen's Duct, or Lingual Foramen.

Passing now to the "Trunk." A capable technician should know more of the Thoracic cage than its mere rib detail. The correct methods of projecting the Sternum, in lateral and oblique positions, should be known and understood, and here we meet the term "Manubrium"; the Manubrium being the upper bony segment of the Sternum.

Early in his or her work the student meets with, shall we say, the spinal problems. It seems so simple to procure the routine A.P. and lateral views of the Dorsal Spine — yet the upper section of the lateral projections give little or no detail of the first sections of the upper dorsal vertebrae. It is the superposition of the shoulder girdles that is responsible for this little annoyance, and it is knowledge of their construction and the means of pulling the shoulders out of the way that will make for a more satisfactory radiograph. The "back-bone" or spine

CONVERSION FROM SCREEN TO NON-SCREEN OR VICE VERSA

KvP Range	Ratio	KvP Range	Ratio
30-40	1:2	60-70	1:6½
40-50	1:3½	70-80	1:8
50-60	1:5	80-90	1:9

To change from screen to non-screen multiply Ma Secs by ratio; from non-screen to screen divide by ratio.

Example: A non-screen exposure is 54 KvP ¼ sec.; then a screen exposure will be 1/5, that is 1/10 sec., with ma. constant.

STEREO TUBE SHIFT (INS.)

$$\text{SHIFT} = \frac{2.5 \times \text{A.f.d.}}{\text{V.D.}}$$

Anode Film Dist.	Viewing Distance 25″	27″	29″	31″
25″	2½″	2¼″	2⅛″	2″
28″	2¾″	2⅝″	2⅜″	2¼″
30″	3″	2¾″	2⅝″	2⅜″
36″	3⅝″	3⅜″	3⅛″	2⅞″
40″	4″	3¾″	3½″	3¼″
48″	4¾″	4½″	4⅛″	3⅞″
60″	6″	5½″	5¼″	4⅞″
72″	7¼″	6¾″	6¼″	5¾″

Approximate Change in KvP Per CM. From a Given Basic Technique at Various KV Ranges, Using Par-Speed Screens

Kvp.:	Change per centimeter:
30-40	1 -1½ Kvp.
40-55	1½-2 Kvp.
55-70	2 -2½ Kvp.
70-85	3 Kvp.

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JANUARY

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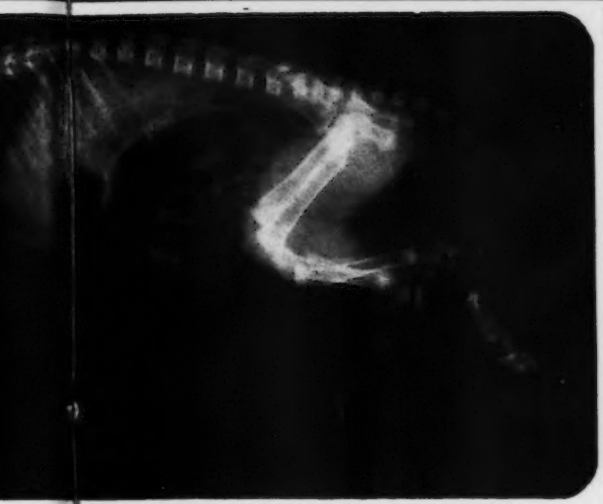
Eighth Annual Dominion Convention --- Vancouver, Sep

Spot Calendar

...e Canadian Society of Radiological Technicians 1950



LEOPARD RADIOGRAPH BY PERCY GHENT, C.I.L.

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...er, Sept. 7th, 8th, 9th, 1950

TABLE FOR FINDING EXPOSURE WHEN DISTANCE CHANGED

20″	1.0	1.6	3.2	5.8	9.0	13.0
25″	.64	1.0	2.1	3.7	5.8	8.3
30″	.44	.69	1.4	2.6	4.0	5.8
36″	.31	.48	1.0	1.8	2.8	4.0
40″	.25	.39	.81	1.4	2.3	3.2
48″	.17	.27	.59	1.0	1.6	2.3
60″	.11	.17	.36	.64	1.0	1.4
72″	.08	.12	.25	.44	.69	1.0
New T.F. Dist.	20″	25″	36″	48″	60″	72″

Example: Known exposure 50 m.a.s. at 40″.
New Distance 20″: Factor .25; 50 × .25 = 12½ m.a.s.

KvP VARIATION WITH RELATION TO TIME

Time Ratio	KvP Chance
2	10
3	13
4	16
5	18
6	20
7	22
8	24
9	26

Example: To make Exposure twice as fast add 10 Kv.

TABLE FOR CONVERSION OF MA-SECONDS INTO FRACTIONS OF A SECOND AT VARIOUS MILLIAMPERAGES

	Milliamperes:					
Mas:	50	100	150	200	250	300
4	1/12	1/25	.....	.....	.....	.....
6	1/8	1/17	1/25	.....	.....	.....
8	1/6	1/12	1/20	1/25	.....	.....
10	1/5	1/10	1/15	1/20	1/25	.....
12	1/4	1/8	1/12	.....	1/20	1/25
14	1/3	1/7	.....	1/15	.....	.....
16	.....	1/6	1/10	1/12	1/15	1/20
18	.....	.....	1/8	.....	.....	.....
20	2/5	1/5	1/7	1/10	1/12	1/15
24	1/2	1/4	1/6	.....	1/10	1/12
26	.....	.....	.....	1/8	.....	.....
28	.....	.....	.....	1/7	.....	.....
30	3/5	.....	1/5	.....	.....	1/10
32	.....	1/3	.....	.....	1/8	.....
34	.....	.....	1/4	1/6	.....	.....
36	3/4	.....	.....	.....	1/7	1/8
40	4/5	2/5	.....	1/5	.....	.....
42	.....	.....	.....	.....	1/6	1/7
50	1	1/2	1/3	1/4	1/5	1/16

CONVERSION FROM SCREEN TO NON-SCREEN OR VICE VERSA

KvP Range	Ratio	KvP Range	Ratio
30-40	1:2	60-70	1:6½
40-50	1:3½	70-80	1:8
50-60	1:5	80-90	1:9

To change from screen to non-screen multiply Ma Secs by ratio: from non-screen to screen divide by ratio.

Example: A non-screen exposure is 54 KvP ½ sec.; then a screen exposure will be 1 5, that is 1 10 sec., with ma. constant.

STEREO TUBE SHIFT (INS.)

$$\text{SHIFT} = \frac{2.5 \times \text{A.f.d.}}{\text{V.D.}}$$

Anode Film Dist.	Viewing Distance 25"	27"	29"	31"
25"	2½"	2¼"	2⅛"	2"
28"	2¾"	2⅝"	2⅜"	2¼"
30"	3"	2¾"	2⅝"	2⅜"
36"	3⅝"	3⅜"	3⅛"	2⅞"
40"	4"	3¾"	3½"	3¼"
48"	4¾"	4½"	4⅛"	3⅞"
60"	6"	5½"	5¼"	4⅞"
72"	7¼"	6¾"	6¼"	5¾"

Approximate Change in KvP Per CM. From a Given Basic Technique at Various KV Ranges, Using Par-Speed Screens

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70-85	3 Kvp.

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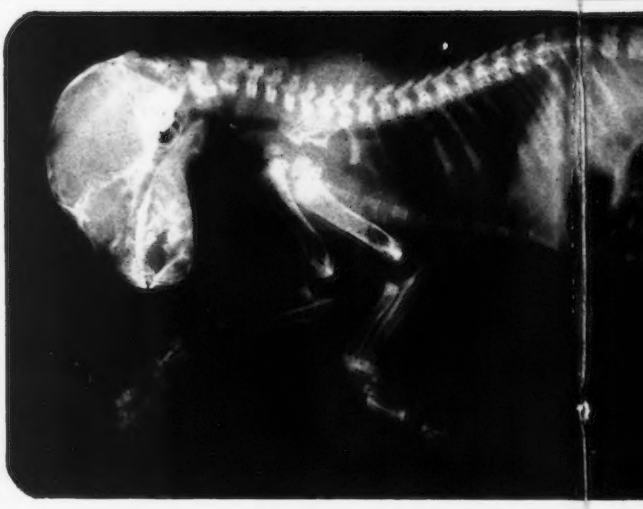

JANUARY

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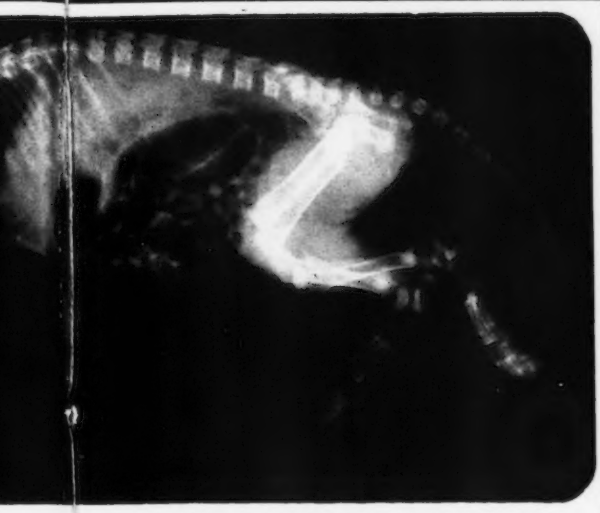

LEOPARD RADIOGRAPH BY PERCY GHENT C I L

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ver, Sept. 7th, 8th, 9th, 1950

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10	1/5	1/10	1/15	1/20	1/25	.....
12	1/4	1/8	1/12	.....	1/20	1/25
14	1/3	1/7	.....	1/15	.....	.....
16	.....	1/6	1/10	1/12	1/15	1/20
18	.....	.....	1/8	.....	.....	.....
20	2/5	1/5	1/7	1/10	1/12	1/15
24	1/2	1/4	1/6	.....	1/10	1/12
26	.....	.....	.....	1/8	.....	.....
28	.....	.....	.....	1/7	.....	.....
30	3/5	.....	1/5	.....	.....	1/10
32	.....	1/3	.....	.....	1/8	.....
34	.....	.....	1/4	1/6	.....	.....
36	3/4	.....	.....	.....	1/7	1/8
40	4/5	2/5	.....	1/5	.....	.....
42	.....	.....	.....	.....	1/6	1/7
50	1	1/2	1/3	1/4	1/5	1/16

of the human body consists of 33 vertebrae in all, divided, as we know, into the Cervical, with 7 vertebrae; Thoracic (or Dorsal) with 12 vertebrae; Lumbar with 5 vertebrae; Sacral with 5 vertebrae; and Coccyx with 4 certebrae; Some authorities, however, have considered the Sacrum and Coccyx as of one unit each. To know the beginning and ending of these sections is important. If we cannot visualize in our own mind's eye the location of the "T-1" to "T-12", or "Lumbar spine to include "S-1", we cannot produce the required radiographs. Attached to the vertebrae there are the spinous and transverse processes, with the attendant facets, foramina, notches, and so forth. Knowing such anatomical details, is a decided help in positioning, especially for oblique views. Should one have a skeleton in the closet (and I mean literally) it is a good thing to look at it from time to time. If possible put the thing on your x-ray table and note the segments lying directly in line with the central ray in various positions, and under certain conditions. Twist the spinal vertebrae and note its limited movement and think of this when handling the live body. An oblique projection of the Cervical vertebrae may be confidently procured by placing your patient at an angle of 45°—either from the supine position or the prone position. But 45° cannot be considered as a fixed figure for the whole length of the spine. The Dorsal "Oblique" should be but the slightest deviation from the true lateral. While for the Lumbar area this will differ in accordance with the size of the patient, from 20° to 45° and also as to whether Lumbar-Sacral articulations are to be included. However, for positioning there are several fine articles in *The Focal Spot*, and, of course, there are the text books one can refer to. The main thing is to know what one is after. In positioning for the Pelvis and Sacro-iliac joints the student technician in many cases is only familiar with the Iliac-Crest and the Greater Trochanter of the Femur — mainly because these are pointed out as being "land marks." A special and definite study should be made of the individual segments making up this portion of the anatomy. The Pelvis is composed of the Sacrum, and Coccygeal vertebrae, the Ilium, Ischium and Pubis; which three bones are united to form the Innominate or hip bone, articulating with the sacrum at the sacro-iliac joint. Too often the Greater Trochanter of the Femur is spoken of as the hip bone. Maybe here the term "Acetabulum" comes to our notice. What is it? Santé tells us that it is "the joint cavity in the innominate bone for articulation with the head of the femur to form the hip joint." The curves, spaces and relative positions of each member of the Pelvis unit should be clearly understood. Such knowledge is not merely useful but necessary, and if the technician can clearly visualize this anatomical set up, it becomes easy to produce concise radiographic projections of the Sacro-Iliac spaces, such as is generally required when oblique projections, or the "Hibbs" angle are requested.

Earlier I spoke of the shoulder girdle. Many requisitions come in merely asking for x-rays of the shoulder — or both shoulders. Regarding the Scapula and Clavicle, these can be generally projected without hesitation — but suppose the request is for the Acromion process, or the Coracoid process. Would there be any confusion as to which was the Acromio-Clavicular joint or the Sterno-Clavicular joints, and where are the Greater and Lesser Tuberclae to be found?

As regards the extremities — no technician is confused so long as the requisitions refer mainly to hands and feet, or arms and legs. But when the medical or technical terms are employed, then there is some uncertainty. For instance: "Please, x-ray to show Pisiform, in relief," no hint being given as to the location of this "something," and no mention of it in the yellow pages of "Sante." If we are familiar with the wrist bones, then there is no hesitation as to how we are to proceed. Our students then should make a very special study of this extraordinary contrivance, this so extremely flexible unit of the human anatomy. The wrist bones, 8 in number, are: Os Magnum, Scaphoid, Semilunar, Trapezium, Trapezoid, Cuneiform, Unciform and Pisiform. You may, however, have heard of them under other names. (There was some concern and much speculation a week or so ago, when a requisition came to the department requesting A.P. and Oblique views of the greater and lesser multiangular bones.) Each of these small bones has its own particular shape and position and is easily identified when projection is made in the Palmar View. Because the Scaphoid (sometimes termed "Navicular") is the bone so often injured, we are more apt to remember it than the others. There are two names often connected with wrist fractures, "Bennett's" and "Colles's", and these names should be as well remembered as "Caldwell," "Waters" and "Law's," in connection with sinues and mastoids. Actually neither of these fractures are truly of the wrist. A "Bennett's" fracture occurs at the base of the thumb; it is really a fracture-dislocation of the first metacarpal, while the "Colles's" fracture involves the distal end of the radius. Requisitions often call for views of the wrist when either of these fractures is suspected. From the wrist (Carpus) we pass to the hand with its Meta-carpal bones and Phalanges. Humerus, Radius and Ulna are common place terms and used on requisitions frequently.. Views of the "elbow joint" also are not an uncommon request. Would there be, however, some uncertainty about procedure should a doctor ask for x-ray views of the Olecranon Process, Coronoid Process or Radial Fossa?

Ankle and foot injuries are familiar and so often technicians go through the motions of producing radiographic views of these extremities in A.P., Oblique and Lateral positions, without being able to identify the component parts visualized. The relative positions of the Tibia and Fibula to the Astragalus, is noted in every A.P. projection. Could this relationship be described in an oral examination? Other ankle bones are the Cuboid, Scaphoid, and the Cuneiforms, three in number; these with the Metatarsal bones and Phalanges make up the foot. The positioning and radiographing of the Os Calcis is common enough and presents no difficulty, but should the word "Calcaneous" or "Os Calcaneum" be used instead of "Os Calcis" the technician, unfamiliar with anatomical terminology, might easily be confused.

The Sesamid bones are rarely mentioned on x-ray requisitions. However, I do remember one such — "All sesamoid bones, please." What are these bones and where are they located? I believe the number is quite indefinite. They are small bones embedded in the tendons; their purpose appears to be protective. They are mainly located in the Metacarpo-Phalangeal joints of the hands and the

Metatarso-Phalangeal joints of the great toes. The largest Sesamoid bone is the Patella, a protecting cap for the knee joint.

It seems to have been the general understanding that x-ray technicians should be concerned only with the human frame, and when asked to study anatomy think immediately (and only) of the Skeletal System. So far no mention has been made regarding the Viscera. Dr. J. A. Vidal, Provincial Director of Anti-Tubercular Services, speaking at the Annual Luncheon of the Province of Quebec Society of X-ray Technicians, reminded us that our work had become increasingly important during the past forty years because, whereas at one time x-rays were confined to broken bones, now there is no part of the body not explored by them.

Therefore it goes without saying that a very definite knowledge of the organs of the body is essential. Size, shape, function and relative positions of these should be clearly noted. That large hollow muscular organ that lies in the Thorax and between the lungs, slightly more to the left than to the right, is the Heart. It sits, as it were, upon the central depression of the Diaphragm. We may never be asked to radiograph its Auricles and Ventricles, but it is wise to be acquainted with their necessity and function. There are two Lungs, we know, but which of the two has three lobes? Can we locate the positions of the Liver, Spleen, Kidneys, Ureters and Pancreas. If the technician is unfamiliar with the positions of these organs, he or she can hardly expect to produce the proper radiographs when requested.

All x-ray technicians have their adventures in Gastrics. They prepare the Barium meal, prepare the apparatus for fluoroscopy and radiography, and even watch the proceedings over the shoulder of the radiologist. Yet, how many are familiar with the Gastro-Intestinal Tract. In a recent competition, of several candidates, only one was able to give a concise and proper description of this system and its function. Few of us really "love" Gastrics; that, perhaps, is why our knowledge is so limited.

The Esophagus is no problem, for it is often necessary to give a Barium meal (either fluid or paste) to demonstrate an obstruction (real or imaginary). Watching through the fluoroscopic screen, the stomach is easily identified, but the operator would be quite at a loss if asked to point out to the Radiologist, the Pylorus or Duodenum. In the examination of the bowels the barium is watched with keen interest as it surges through the Descending Colon, across the Transverse Colon to the Ascending Colon. Suppose now the Radiologist leaves the room, asking the technician to procure 8 x 10 Bucky plates of the Ileo-caecal area, the Caecum, and the Sigmoid loop. The patient is neither comfortable nor happy; it would, indeed, be a calamity if he were left lingering in his discomforture while the x-ray operator ran round wildly looking for a text book or for the assistance of one who "knew," before he could procure the desired films. It pays to be thoroughly familiar with the Gastro-Intestinal Tract. Therefore, to outline it briefly, at this point, might be in order. The G.I. or Alimentary tract is really subdivided into three main sections; the stomach, small intestines and large intestines. At the lower end of the stomach there is the Pylorus, or junction between the main body of the stomach and the Duodenum. The Duodenum we are fairly familiar with, chiefly, as being something con-

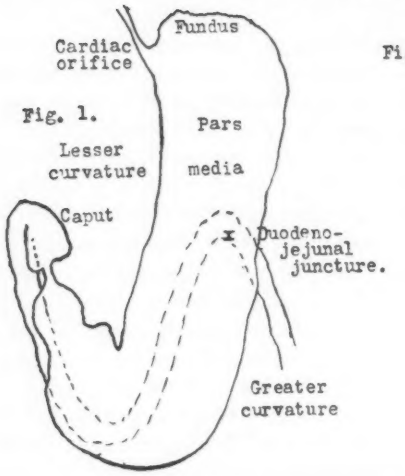

Fig. 1.

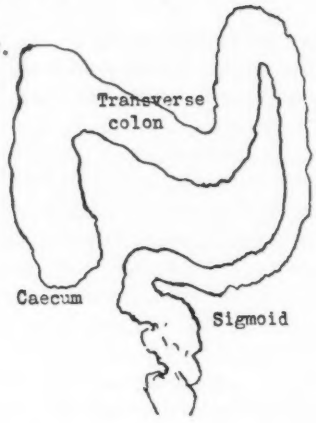

Fig. 2.

Note: For brevity the small intestine is omitted.

nected with Ulcers. Actually it is the point of union between the stomach and the small intestines. Of the Small Intestines the upper two-fifths is named the Jejunum and the remainder the Ileum, the whole comprising some twenty feet of intestine in coils. The Small Intestine enters the Larger Intestines at the lower end of the abdominal cavity, through the Ileo-Caecal Valve, a point just above the Caecum, or closed end of the Ascending Colon, which turns upwards for about five inches, leading into the Transverse Colon; this extending across the abdomen some fifteen or twenty inches, to turn downwards again, as the Descending Colon, terminating at the Rectum, by way of the Sigmoid loop.

What should the technician know about Glands? Of the Glands of the human body their name is "legion"; certainly there are too many to memorize, or to attempt to enumerate in an article such as this. However, there are a few that do find their way into x-ray requisitions, and therefore, should be given some study. In every projection of the skull the radiologist attaches great importance to the visualization of the Pineal Gland. It is especially looked for in the A.P. views and is usually identified as a small calcified spot in the centre line. The Pineal body lies above the third ventricle and is attached to the mid-brain. It reaches its maximum size in children, becoming calcified in adults. Also in the skull there is the Pituitary Gland, sometimes called the Hypophysis. It is a small body about one centimeter in diameter, situated in the base of the brain, housed within the Sella Turcica. It is often requested when diagnosis of certain body developments are in question. The Salivary, Parotid, Submandibular and Sublingual are glands that are occasionally requisitioned for, especially when some small calcification is suspected. Their very names suggest their locations. The Thyroid, Parathyroid and Thymus are Glands having much to do with the development of the human body and can generally be identified by the radiologist in high chest projections. If asked to position a patient to project the Adrenal Glands, it should be remembered that they are a portion of the Urinary Tract

and are situated on either side of the body just above the Kidneys. Needless to mention, there are other and special glands peculiar to the male and female, which at times come under medical consideration and occasionally brought to the attention of the x-ray technician. Incidentally, a question was asked of the candidates at an oral examination recently — "How would you proceed to procure radiographs of the Prostate Gland of a female patient?" The answers were somewhat surprising; though perhaps not so, when it is known that all the candidates were male technicians; and female patients were the exception rather than the rule in this particular hospital.

The Muscular System is part of the anatomical make-up, but does not call for deep study on the part of the x-ray technician. However, the ability to differentiate between the muscular and non-muscular patient is a characteristic that a technician must develop, and is especially necessary for a due and proper consideration of techniques in chest work. Normally there are three areas in which different kinds of muscles exist. The Skeletal or Voluntary Muscles, which provide power for movement; the Smooth or Involuntary Muscles, covering the blood vessels, and other fluid-conducting channels; and the Cardiac Muscle, forming the shroud or covering for the heart. The thickness of these muscles will naturally effect the density of the image on the film.

A full study of Anatomy could not be made without a measure of consideration being given to the Circulatory and Nervous Systems. Of the latter there is not much that actually enters into our sphere of activities, though nerve centres and nerve locations induce important consideration on the part of the radiologist when encephalographic or myelographic examinations are in progress. As regards the Circulatory System, it is worth while studying any chart that may be available to us, giving information in a generalized way. Location of main arteries and the circulation channels of the Venous System should be observed, such knowledge being found to be very useful when requisitions come in for suspected calcified arteries, or Venograms are being done. The first consideration of a "First-Aider" is to "stop the bleeding." In order to do this one must be thoroughly familiar with the Circulatory System for, to stop the bleeding, it is necessary to definitely know the Pressure Points. While an x-ray technician may not necessarily have to be a qualified First-Aider, some occasion may occur, especially in accident cases, when such knowledge may be found to be advantageous.

In presenting an essay of this nature neither time nor circumstances permit a really detailed study of the subject. One cannot condense to a few pages, what the greatest authorities of the Medical and Radiological Professions have put into volumes. It has been possible only to offer a brief sketch of the complex organization of the human form. Enough has been said, I hope, to suggest, especially to the Student Technician, that there is much more to become acquainted with than the generally pointed out "landmarks." We should all endeavour to emulate that Superman characteristic of x-ray eyes, in order that we may "see" within our patient that which we expect to see projected upon the x-ray film, first of all being sure that we know what we want and where to find it.

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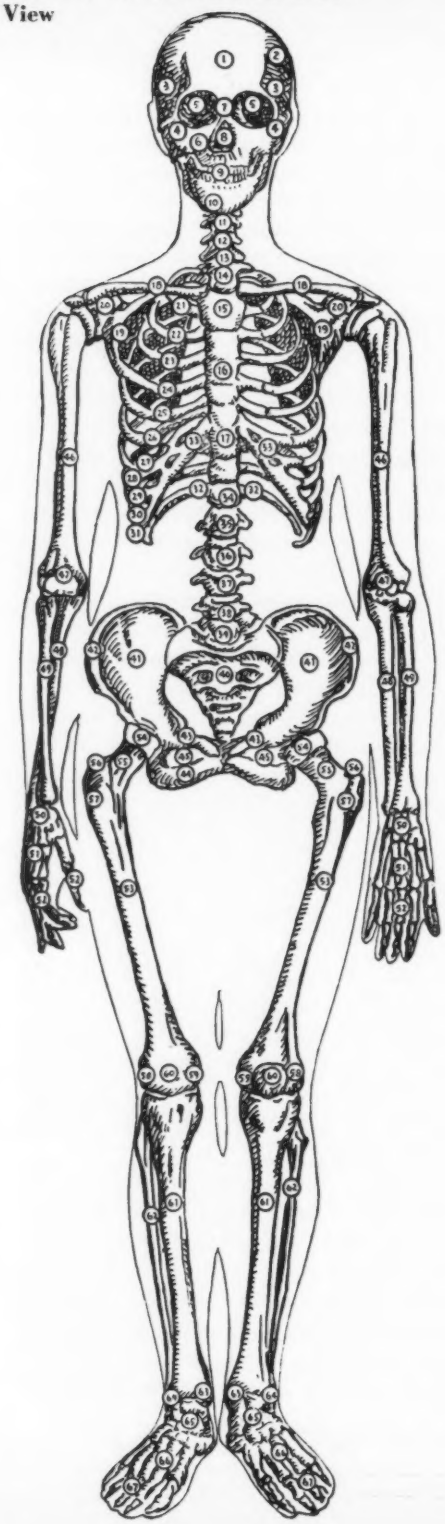
Medical Radiographic Technic—Files.
Practical Anatomy—Thos. Walmsley.

THE RADIOGRAPHIC SKELETON

Front View

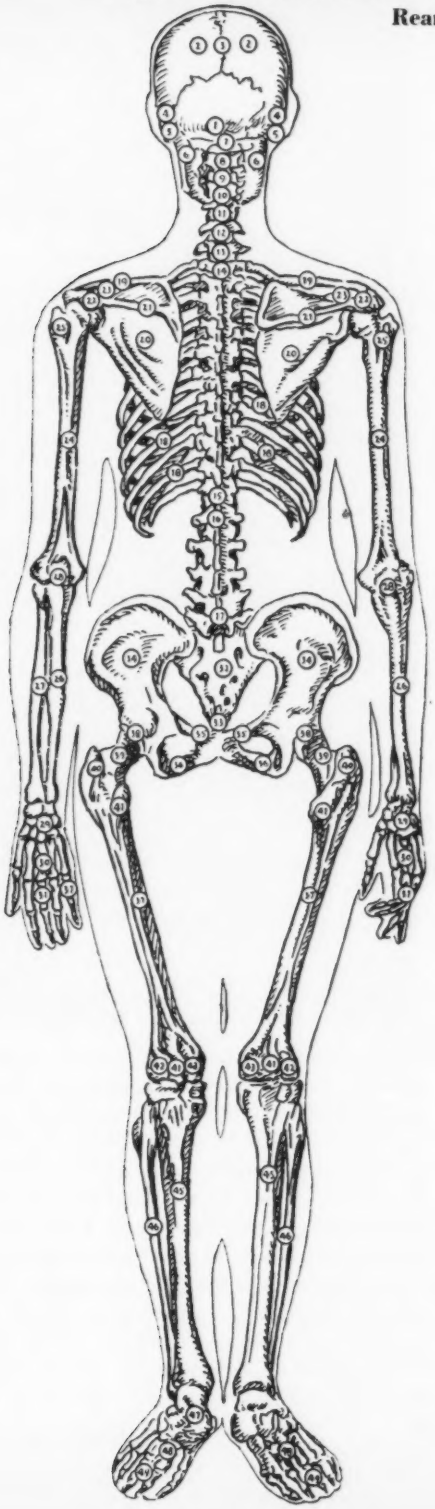
Anterior View

1. Frontal Bone
2. Parietal Bones
3. Temporal Bone
4. Malar Bones
5. Bony Orbit
6. Superior Maxilla
7. Bony Cavity of Nose
8. Vomer
9. Teeth
10. Inferior Maxilla
11. 5th Cervical Vertebra
12. 6th Cervical Vertebra
13. 7th Cervical Vertebra
14. 1st Dorsal Vertebra
15. Manubrium, or Handle of Sternum
16. Body of the Sternum
17. Ensiform Process
18. Clavicle
19. Scapula
20. Coracoid Process of Scapula
21. 1st
22. 2nd
23. 3rd
24. 4th } True Ribs
25. 5th
26. 6th
27. 7th
28. 8th
29. 9th
30. 10th } False Ribs
31. 11th
32. 12th
33. Costal Cartilage
34. 12th Dorsal Vertebra
35. 1st Lumbar Vertebra
36. 2nd Lumbar Vertebra
37. 3rd Lumbar Vertebra
38. 4th Lumbar Vertebra
39. 5th Lumbar Vertebra
40. Sacrum
41. Ilium
42. Crest of Ilium
43. Crest of Pubis
44. Ischium
45. Thyroid or Obturator Foramen, round opening of Os-Innominatum
46. Humerus
47. Lower Head of Humerus
48. Ulna
49. Radius
50. Carpus
51. Metacarpus
52. Phalanges
53. Shaft of Femur
54. Upper Head of Femur
55. Neck of Femur
56. Great Trochanter of Femur
57. Lesser Trochanter of Femur
58. Outer Tuberosity
59. Inner Tuberosity
60. Patella
61. Tibia
62. Fibula
63. Inner Malleolus (of the Tibia)
64. Outer Malleolus (of the Fibula)
65. Tarsus
66. Metatarsus
67. Phalanges



THE RADIOGRAPHIC SKELETON

Rear View



Posterior View

1. Occipital Bone
2. Parietal Bones
3. Sutures
4. Temporal Bones
5. Mastoid Process of Temporal Bones
6. Inferior Maxilla
7. 1st
8. 2nd
9. 3rd
10. 4th — Vertebrae of Neck
11. 5th
12. 6th
13. 7th
14. 1st Dorsal Vertebra
15. 12th Dorsal Vertebra
16. 1st Lumbar Vertebra
17. 5th Lumbar Vertebra
18. Ribs
19. Clavicle
20. Scapula
21. Spine of Scapula
22. Acromion Process of Scapula
23. Coracoid Process of Scapula
24. Humerus
25. Great Tuberosity of Humerus
26. Ulna
27. Radius
28. Olecranon Process of
29. Carpus
30. Metacarpus
31. Phalanges
32. Sacrum
33. Coccyx
34. Ilium — Of Hip-Bone
35. Pubis — Of Hip-Bone
36. Ischium — Of Hip-Bone
37. Shaft of Femur
38. Head of Femur
39. Neck of Femur
40. Great Trochanta of Femur
41. Small Trochanta of Femur
42. Outer Tuberosity of Femur
43. Inner Tuberosity of Femur
44. Inter Condylar Notch of Femur
45. Tibia
46. Fibula
47. Os Calcis
48. Metatarsus
49. Phalanges

Courtesy Ferranti Electric Ltd.

The Temporomandibular Articulation

THE mandible, which is the largest and strongest bone in the face, presents many angles and surfaces which, when radiographic examination is necessary, present problems to the technician. The mandible is horseshoe shaped, consisting of a horizontal portion, the body, two perpendicular portions, the rami, which unite with the body at nearly right angles. The upper portion of the ramus divides in two portions: one, the coronoid process, and the other, the condyloid process. The condyloid process represents an articular surface for articulation with the temporal bone. Various projections of the mandible may be obtained with a little care on the part of the technician. The temporomandibular articulation, however, is quite another story, and deserves our special attention.

Technically, the examination of the Temporomandibular joint is one of the most difficult examinations you are called upon to perform. The location of the joint makes it nearly impossible to obtain a view whereby the condyle and joint surface is free from other bone structure. In order to obtain the best view possible with ordinary radiographic equipment, the examination has to be individualized with a view to the particular case at hand.

There will be no attempt in the following paper to discuss the many ways one may attempt to obtain views of the Temporomandibular joint. It will suffice to say that most techniques used are those that will show a true lateral or semi-oblique view of the joint. However, there have been few methods suggested that will show an A.P. projection of the condyle. In most cases, an attempt to obtain an A.P. view of the condyle of the mandible will be obstructed by overshadowing by the maxilla, petrous portion of the temporal bone, etc.

Presented at 14th Convention O.S.R., June, 1949, by Mark Triller, R.T., Educational Div. Ansco of Canada Ltd.

Courtesy The X-Ray Technician.

The technique which will be discussed is one suggested by Dr. Fleming Norgaard of Copenhagen, Denmark, as described in "Temperomandibular Arthrography" with some very slight variations, which are found necessary in obtaining the desired view. It produces a quite desirable view of the joint surface, condyle and ramus of the mandible. We have added the accompanying slides on positioning to act as a visual guide, and the final slide to show the result that may be obtained.

The patient is placed on the radiographic table in the A.P. position. The cassette is placed under the patient's shoulder so that the lower margin is just below the head of the humerus; the median line of the posterior surface of the skull is resting on the medial margin of the cassette. The outer margin of the cassette is now raised until it forms an angle of 20° with the table top and supported with a sand bag. It, also, has been found advisable to place a sand bag on the other side of the patient's skull so that the patient may be kept in position without difficulty.

The patient is now instructed to open his mouth as wide as possible, and a "bite" is placed between the teeth to maintain position. Then the patient is requested to pull his chin down as far as possible.

A short small cone is used. The tube head is now tilted 30° craniocaudally (toward feet) and 20° mesiolaterally. The tube is now placed in such position that the cone will touch the patient's skull and allow the central ray to pass through the inner canthus of the orbit on the side being examined. In such a position, the central ray will be projected through the upper medial quadrant of the orbit, obliquely downwards and laterally through the temporomandibular joint. The adjustment requires a little training, but it is not particularly difficult. It is important that the patient does not tilt his head backwards on opening the mouth maximally.

In this form of radiography, the close-up method is used and, hence, it can be used only on employment of shockproof equipment. Owing to the technique of adjustment, the relatively boneless space represented by the orbit will be greatly enlarged, and its picture will be markedly effaced. In this way, the condyle, the neck of the mandible and the articular tubercle stand out relatively distinctly as to contour and structure. The condyle is depicted in a plane practically parallel with its greatest extension. The zygomatic arch crosses the neck of the mandible. With good mobility in the joint, the joint surfaces and the joint gap in the anterior part of the joint can be estimated very well. Naturally, the method may be employed also for examination for fractures of the condyloid process and, usually, the zygomatic arch.

The radiograph which you see is the view that may be obtained. The projection may seem a bit strange at first, but a mention of a few landmarks will be of assistance to you. In the centre, we have the condyloid process showing the articular surface and, extending down from this, the ramus of the mandible. In the upper left quadrant is the frontal bone and the zygomatic portion of the frontal bone. Directly opposite the condyle is the junction of the frontal bone and the zygoma. While in the lower left quadrant is the zygomatic arch crossing the ramus of the mandible. The thin white line crossing the ramus is the inferior border of the greater wing of the sphenoid, and directly below this line is the inferior orbital fissure.

The technique used in this particular case was:

Film: Ansco Hi-Speed. Dis. 14".
Screens: Parspeed. KVP. 48. MAS. 30.

Notable Advances in Radiology

13th Mid-Winter Meeting of C.A.R. in Montreal

By PERCY GHENT, R.T.

FROM the Maritimes to British Columbia, nearly a hundred radiologists from the diagnostic and therapeutic fields, assembled in Montreal during the first week in January for the 13th Mid-Winter Meeting of the Canadian Association of Radiologists. We were privileged to hear the scientific papers presented in the lecture halls of Notre Dame, St. Luke's, and the Royal Victoria Hospitals. Both in the realms of diagnosis and treatment, some striking progress has been made, and the records of that progress made the meeting an outstanding one.

Spontaneous applause broke forth more than once while Dr. Ronald C. Burr of the Kingston Cancer Clinic threw slide after colored slide on the screen, that told with an eloquence denied to mere words, of his success in the treatment of various types of skin cancer by x-ray and radium. That acclaim was richly earned. Malignant lesions of the scalp, the eye and ear areas, the lips, cheeks and of other regions were shown as they appeared before and after treatment. Before irradiation, most of those lesions appeared discouraging to the point of hopelessness. But the cures shown, the end results of clean and normal skin tissue, and an almost incredible absence of scarring, made a deep impression on all present. Dr. Burr's talk was a heartening experience.

In the warfare against cancer there are brilliant victories that merit wider knowledge. As both radiologists and radiographers are well aware, work similar to that of Dr. Burr, and with the same success, is being carried on in medical centres across Canada. In this healing phase of radiology, indeed, the work of the late Dr. G. E. Richards brought honor and renown to Canada. Sometimes with the co-operation of surgery, sometimes without, the ministrations of x-ray and radium have triumphs innumerable to their credit.

DIAGNOSTIC PROGRESS

As technicians know well—and thousands of patients, perhaps, even better!—the examination of the gastro-intestinal tract for ulcers and other lesions, is carried on by x-ray by the opaque meal method. One of the difficulties of such examinations, hitherto, has been getting adequate radiographic definition of the mucosal pattern in the cardiac region of the stomach, because of the natural concentration of the opaque fluid below the cardiac opening.

By special techniques, original positionings, and much patient observation, Dr. Albert Jutras, radiologist-in-chief at Montreal's Hotel Dieu, has explored the upper area of the stomach with the rays, and brought new and helpful light on its mucosal pattern in health and disease. His research has proved that malignant and other lesions of the region, so long elusive, can be demonstrated even in their early stages. There is now no reason, he revealed, why such pathology should be overlooked. His methods were described and a wealth of slides displayed during his paper. By his original research, Dr. Jutras has marked an advance of great importance in the x-ray study of the stomach. His colleagues of the specialty

were swift to recognize and applaud that advance.

New and improved techniques for the discovery of ills peculiar to the gastro-intestinal region highlighted the Montreal meeting. Techniques and interpretation, lessons learned in the hard school of experience, were discussed and illustrated by a number of specialists. As paper after paper was read, we were impressed deeply by the keen and earnest search for greater success and accuracy in diagnosis manifested by the speakers; the frankness and honesty of the discussions following every paper.

AGE GROUPS IN TUBERCULOSIS

Mass chest surveys by x-ray for the discovery of tuberculosis have become familiar to us all in recent years. In the whole campaign for the eradication of that disease there is no weapon more useful. But, as pointed out by Dr. Crutchlow, of Montreal, there has been a tendency to regard examinations of age groups under 10 or over 50 as of minor significance because evidence of TB was said to be found in them but rarely. He challenged that belief, and with emphasis.

His experience and prolonged research shows that in the over-50 grouping there has been a percentage of disease, in various stages of severity, as high as 29 in some investigations. Examination of the older-age patients should be as thorough and inclusive as that of the younger ones, he stated. And that equally careful measures should be insisted upon for the prevention of the spread of infection from that group, was obvious, said Dr. Crutchlow.

Following the Noronic tragedy of mournful memory, the identification of the charred, pathetic fragments of so many of the victims seemed impossible, as those of us who saw those fragments, will readily agree. Yet, by a comparison of radiographs made of such remains with those made of the victims in life, no less than 27 seemingly hopeless cases were positively identified. Every bone has its individual structural pattern, its own architectural markings. It has, if you like, its own finger-print that is unique. Hence, by patient, intensive comparisons in the radiographic studies, identifications were made that in many instances would have been impossible by any other method known. Dr. A. C. Singleton, friend of Canadian x-ray technicians, told of the studies by which he and his associates established identification.

Inevitably, during the three-day scientific pow-wow, many of the papers were highly technical in nature, involving the formidable terminology of anatomy, pathology, and physics. But even to this lay brother who worked with professional radiologists for so many years, they were of interest uncommonly deep and enlightening.

Even complex, professional papers can be linked with current news. Dr. Donald MacNeil, Welland, Ontario, told of x-raying the chests of victims of nickel carbonyl poisoning, with three fatalities, reported recently in the press. On the radiographs, he said, the lung changes were similar to those shown on chest radiographs of poison-gas victims during World War One.

Suggestions by a Student

By R. B. BUSHNELL, Student Member
Colonel Belcher Hospital, Calgary, Alberta

YOU will recall the excellent report given by Mr. H. M. Welch, at a recent meeting, concerning the work at the Dominion Convention in Halifax, both as our delegate and as a Director. Following his report, there was some discussion of matters concerning the standardizing and marking of examinations.

Unfortunately, one of my faults has always been being slow to express my thoughts at the proper time. As a rule, when the meeting is over and I am home, I can usually think of what I would like to have said, and, of course, by that time it is too late.

Part of the discussion concerned the raising of the examination standards or qualifications of an R.T. — both by raising the examination standards themselves and also, as a prerequisite, requiring that an applicant possess at least a Grade Eleven education, including Physics I. Everyone agreed that this was an excellent idea. While I agree also, I still have the examinations to write, and I confess, I hope they are not too difficult.

To raise the qualifications of an R.T. is a good idea, I well agree, but that alone is not enough to raise the general standard and quality of our work which is the ultimate aim of this Society. I think everyone will realize that raising our standard of work is the personal responsibility of each and every technician. There is an old saying, to the effect that, "A chain is as strong as its weakest link." Similarly, our reputation and tradition of quality work will always be judged not by the best example, but by the poorest example of work by any technician. Therefore, every technician should continue to maintain or to raise the quality of his or her work. A technician who does work that is not the best of his or her ability, is hurting not only himself, but all other technicians as well.

As a student, I envy those of you who have written and qualified for your R.T. certificate. It is an accomplishment of which you can well be proud. But remember, the value you place on that qualification is in direct proportion to the effort and energy you expended to obtain it. Should the requirements be few and qualifications easily met, you wouldn't value the certificate nearly as much.

The same thought applies to our local Society and membership in the C.S.R.T. Should active membership be easily obtained and the qualifications few, such membership would possibly not be highly valued. As a matter of fact such a state of affairs might well breed an atmosphere of apathy and indifference which would hurt the Society a great deal. The value of this Society to each member is only in direct proportion to the respect we have for it, and to the effort and energy we have expended to make it a success. That is a thought no one should forget.

I can appreciate the idea of student members not being allowed to take an active part, or rather should I say, being allowed to take only a limited part in the activities of the Society. It makes a full-fledged membership all the mort respected and valued; something to be worked for.

Consequently, a thought occurred to me following the last meeting — would it not be possible to establish a further qualification recognized by the Society as

that of Master Technician or M.T., or perhaps Master Radiological Technician or M.R.T. There are many here to-night, who in my humble opinion are well qualified to possess the title of Master Technician. They are master craftsmen in the field of Radiography. A *craft* as defined by the dictionary means a *skill*, and a craftsman is one who is *skilled*. Surely you will agree that an x-ray technician is a craftsman in every sense of the word. Further, a master craftsman is one who is a master of a particular skill, and thus it follows that the term Master Technician or Master Radiological Technician, if you prefer, is not amiss.

Away back in history from the 14th to 16th centuries in England and Europe a great renaissance or awakening took place. It was a time when literature, arts and crafts made great headway. It was during this time that we learn of the formation of the guilds and the guild system. A guild was a group or society of craftsmen who gathered together at regular intervals in a guild hall to exchange information of their craft and to set or to fix the standards of quality of their craft. How well they accomplished their purpose can be seen to-day in some of the trades and crafts that are well known. Possibly in silversmith work where the craftsmanship and standards can be traced back many, many years to the old guild system. I mention this only because there exists a similarity between the craftsmen of these early times and the craftsmen of to-day, and our own Society in particular.

I am very much afraid that the present day system of unions overlook many of the good qualities of the early guild system. The unions are concerned, laudably enough, with the welfare and security of their members. However, we often read of union members being paid high wages and striking for higher wages. For example, if all the workers in a particular locality banded together as a union, they would or could, by striking or threatening to strike, be in a position to enforce their demands. It is seldom one reads of a union offering a higher standard or quality of work as a basis for a demand for higher pay. To me, in this democratic Dominion of Canada, such a system smacks of force and totalitarianism and is something alien to our nature. On the other hand the union system does afford the workers a measure of security from exploitation and wrongs that unfortunately did and still do exist. I imagine that unions will, in the time to come, strike a happy medium; they will furnish a security for the workers and guarantee a quality of service to the customers. It should be remembered that each worker is selling a service and the public would be quite willing to pay more if the quality of that service was improved. Remember, we, as x-ray technicians are also selling a service. The only true security lies within ourselves and our ability as technicians and as members of this Society to increase the standard and quality of our services. It was a similar idea that inspired the fathers of our organization to band together and found the Society that has grown to the Canadian Society of Radiological Technicians that we know to-day. It is up to us to continue the work they began.

Following in this train of thought, my idea is that a Master Technician or Master Radiological Technician would possess the four following qualifications or fulfill the four following requirements:

1. To qualify, a technician would have to have at least ten years' experience and

work in the field of Radiography; possibly, including the two years spent as a student technician. I think you will agree, that in no other work, more so than Radiography, does there exist a more accurate and sound source of information than the hard school of experience. I venture to say that one might study text books for a long, long time, but real knowledge is gained from experience. those of you who have qualified as an R.T. some time ago, I am sure, will be honest enough to agree that your learning did not end when you obtained your certificate. Any R.T. worthy of the name is always alert and intelligent enough to improvise, to learn new techniques and to improve on old ones. Any successful person to-day is essentially a student. A doctor doesn't stop studying when he has qualified to practice medicine — to be successful he must study and continue to improve. By creating a further title or qualification of Master Technician or Master Radiological Technician, the Society would furnish a valid motive or incentive for every technician to continue to improve the quality of his or her work.

2. The second qualification, I think would be that a technician should be required to submit a fixed number of written technical papers for presentation to the local Society and later submitted for publication in the Society's journal, *The Focal Spot.*

Such a requirement would have three advantages:

(1) The person submitting the paper would have an accurate knowledge of the subject gained from real experience. Such knowledge and experience would be made freely available to all other members. There are numerous problems in x-ray work which have no parallel in text books and when a technician masters such problems, the knowledge gained should be made available to other technicians. As a suggestion, possibly when the person has finished presenting the paper, he or she could lead an open-forum or round table discussion of the problem. Perhaps others have had a similar experience, and the problem could be analyzed and the information and knowledge gained should be made available to all technicians.

(2) The second advantage would be that such a paper or technical article submitted for publication in *The Focal Spot* would make the knowledge truly available to every member. It would be a permanent record of a solution to a problem any technician might face.

(3) The third advantage would be that in submitting these articles for publication in *The Focal Spot,* our hard working editor would not be so hard pressed for technical articles and technical papers as he is to-day.

3. The third requirement or qualification should be that a member should have held a given number of executive positions in the local Society. These positions need not be consecutive.

By making such a requirement, each member would, in time, contribute to the welfare of the organization from which he or she expects to benefit. No one could honestly sit back and contribute nothing to the organization, and yet expect the organization to be of any value to them. As I have already mentioned, the value of this Society to each of us, is only in proportion to the respect we have for it, and to the effort and energy we have expended to make it a success.

4. The fourth requirement would be for e technician to pass a written and/or a practical examination similar to the one for R.T. But, of course, such an examination would be more difficult and one to test the mettle of a master technician.

By making such a requirement, a technician would continue to study and keep on his toes as it were. It would be too bad if after qualifying for R.T., technicians failed to continue to study and constantly brush up on the knowledge they have so painstakingly acquired.

In other words a Master Technician or Master Radiological Technician would be a master craftsman. One who has gained a background of valuable experience and developed a self-confidence in himself and his work. Such a person could undertake any problem in radiography and complete the work with a uniformly high standard of quality of which they could be justly proud. Such a technician would be a master in the field of radiography and one of whom any of his or her associates, as well as the Society itself, could be justly proud.

To suggest that any qualified R.T. today could not or would not be able to pass a recent R.T. examination is no doubt absurd. On the other hand, if we continue to raise the standards and qualifications for an R.T. (and we all have agreed this must be done), it is conceivable that the day might come when some could not pass the harder examinations. If that should happen, then those persons would be taking credit for qualifications they would not actually possess. If such a situation should come to pass, and it is not impossible, the proper solution would be to make the R.T. qualification valid for a two-year period only. At the end of the two-year period every technician would have to re-qualify. Such would be the logical way to maintain a uniformly high standard of qualification. I only mention this as an alternative to creating the qualification of Master Technician.

Please believe me when I say I am greatly interested in this subject, and I have spent a great deal of time and given much thought to preparing this paper. I hope I have not seemed to be impertinent or assumed too much in presenting this subject for your consideration, but I can assure you I have the welfare of the Society as well as every technician in mind, in preparing this paper. However, I have made no motion nor formed any resolutions regarding this matter. As a student member of this Society, I feel that I do not have the right to do so. This is only the basis or nucleus of an idea. Naturally, I would expect, that should the idea be accepted there would be a great deal of revision. To have the idea alone accepted would please me a great deal. If by means of this paper, I can provoke some discussion, and see some more qualified members take action on its thought and content, I will feel well rewarded.

The Hospital Journals on X-Ray

By SISTER EDMUND CAMPION, R.N., R.T.

Halifax Infirmary, Nova Scotia

That there is to-day a growing interest in x-ray in the hospital and health field is witnessed by the increasing publicity given all phases of the work in the various Hospital Journals. The following list gives the title and location of the articles noted by the sharp-eyed Chairman of our Hospital Journal Club. Sorry, the author's name is not included except in a few cases. We hope that this partial list may be a stimulus to technicians and supervisors to a greater awareness of current trends in the field. It is encouraging to note that at least one article on this subject was written by a hospital administrator.*

"Routine Radiography on Trial"	Hospitals—October, 1948—Page 56
"Highlights of the Past and a Challenge for the Future of X-Ray"	Hospital Management—October, 1948—Page 96
"Angiocardiography"	Modern Hospital—October, 1948—Page 104
"Cost of Routine Admission Chest X-Ray"	Canadian Hospital—October, 1948—Page 36
"Routine X-Rays"	Hospitals—January, 1949—Page 30
"The Need for Specialized X-Ray Teaching"	Hospital Progress—December, 1948—Page 405
,'New X-Ray Movies Developed"	Canadian Hospital—January, 1949—Page 56
"X-Ray Technique in Australia"	Canadian Hospital—January, 1949—Page 66
"X-Ray Movies Hold Promise in Clinical Educational Field"	Hospital Mangaement—January, 1949—Page 106
"X-Ray Inaugural Advances Ca. Fight in Wisconsin"	Hospital Management—January, 1949—Page 107
"Who's Exploiting Whom?"	Modern Hospital—February, 1949—Page 43
"Miniature X-Ray Installed at Toronto Western"	Canadian Hospital—February, 1949—Page 74
"Opinion on X-Ray Department Organization"	Hospitals—June, 1949—Page 28
"New Therapeutic X-Ray Tubes"	Hospital Management—July, 1949
"What's Ahead in X-Ray Diagnosis and Therapy"	Hospital Management—August, 1949—Page 102
"Warning to Aspiring R.T.'s"	Hospital Progress—September, 1949—Page 285
"22 Million Volt Betatron Used for Ca. Treatment in Chicago"	Hospital Management—September, 1949—Page 122
"Standard Curriculum Planned by C.S.R.T."	Canadian Hospital—October, 1949—Page 84
"The Growth of the X-Ray Department," *By Sister M. Veronica, St. John, N.B.	Modern Hospital—November, 1949—Page 79
"What's Wrong With Hospital Radiology?—Six Replies"	Hospital Management—November, 1949—Page 116
"There Are Jobs for the Blind" (Darkroom)	Hospitals—December, 1949—Page 44
"Routine Chest X-Ray—Supporting Evidence"	Hospitals—December, 1949—Page 45
"Radioisotopes—A Primer for Nurses"	Hospital Progress—December, 1949—Page 354
"Curriculum Building in X-Ray Schools" (By Sister M. Alacoque, St. Louis University School)	Hospital Progress—December, 1949—Page 367
"Radiological Technicians Opposed to Union Affiliation"	Canadian Hospital—September, 1948—Page 100
"A 2-Year Course in Radiologic Technology" (By Sister Helen Rita, St. Mary's Hospital, Minneapolis)	Hospital Progress—October, 1947

TRAINING COURSES FOR STUDENT RADIOGRAPHERS

(Montreal General Hospital)

Since the publication of the summary of courses for student technicians in the various provinces in the October, 1949, Focal Spot, we have received details of the course being conducted at the Montreal General Hospital, under the direction of Dr. J. W. McKay. A series of forty lectures on Anatomy and on practical radiography are given by Doctors and Technicians, the anatomy of the part being dealt with immediately preceding the technique of that part. Included in this series are five lectures on Therapy and Protection. Radiographic Physics and Chemistry are dealt with in a series of weekly lectures given at the Queen Mary Veterans' Hospital by Mr. George Jackson of the Picker X-Ray Corporation. Training Courses for x-ray students have been operated at the Montreal General Hospital for the past twenty-five years.

Results of November, 1949, Exams. C.S.R.T.

Successful Candidates Eligable For Registration

ALBERTA
Joan M. Bulmer
Robert Bowden Bushnell
Sister Stella Dube
Margaret Fergstad
Alice M. Gray
Joan Hayton
Margaret McDonald
Wanda E. McNamee
William Schissler
Lorraine Shearer
Janet Strickland

BRITISH COLUMBIA
Frederick C. Barker
Elizabeth H. Blake
Benoit J. Gagnon
Audley M. L. Haack
Daphne Mangin
Mary F. McKinnon
Emily Caroline Thompson

MANITOBA
Richard Barnett
Theresa Chabot
Mercedith E. Drinkwater
Rudolph Dufort
Marjorie Eileen Fortune
Wilfrid F. Gafka
Lorraine Guay
Elinor T. Killoran
Phyllis E. Longmuir
Mary M. Reid
Patricia E. Robb
Roland A. Very

NOVA SCOTIA
Blanche Kolanko
Margaret A. MacRae

NEW BRUNSWICK
Thelma Amos
William Beatteay
Mary Gilbert
Florence Ramona Green
Ester Michaelsen

ONTARIO
William Bannon
Barbara D. Bolton
Herbert A. Clarke
Charles Derochie
Douglas H. Gordon
Evelyn Gillies Hamblin
Agnes Jean McLennan
Sheila Foley McPhee
Sister Mary Evelyn Quinn
Herbert George Ralston
Angela Rathwell
Sister Mary Ruth
Garfield Rutledge
Lois Smith
Louis Staniswezski
Shirley B. Watt

QUEBEC
Marie Lucille Adcock
Barbara Allan
Therese Blain
Gabrielle Bonville
Donald C. Fisk
Marguerite Gendron
Gordon Greenfield
Donalda Morrison
Anita Roberge
Mary G. Ross
Jeanne Rouleau
Sister St. Bernardine
John Hilton Shepley
Beverley E. Walker
Madeleine Yelle

SASKATCHEWAN
Charles B. Johnson
Barbara J. Houghton
Isabel Murphy

U.S.A.
Sheila T. Marsden,
St. Louis, Mo.

FOCAL SPOT DISTRIBUTOR CHANGES

Since publication of the list of Focal Spot Distributors in the October issue, several changes have been made. We are therefore reprinting here the entire list corrected to date.

Alberta: Mr. E. S. Hoare, 2314 Second Street West, Calgary.
British Columbia: Miss Mary McMillan, 1247 Burnaby Street, Vancouver.
Manitoba: Miss Margaret Kreitz, St. Boniface Hospital, St. Boniface.
New Brunswick: Sister Jeanne d'Arc, Hotel-Dieu Hospital, Perth, N.B.
Nova Scotia: Mr. Hugh Menagh, 67 College St., Toronto 2.
Ontario: Mr. Hugh Menagh, 67 College St., Toronto 2.
Quebec: Mr. Albert Cheffins, Box 15, Ste. Anne de Bellevue.
Saskatchewan: Mr. S. G. Johnston, General Hospital, Moose Jaw.

C.S.L.T. ANNUAL CONVENTION AT SAINT JOHN, N.B., JUNE 26-28

The fourteenth Annual Convention of the Canadian Society of Laboratory Technologists will take place at the Admiral Beatty Hotel in Saint John, N.B., on June 26, 27, 28, 1950. A cordial invitation is extended to all those interested in attending. For further information please write to Miss Charlotte Barron, 20 Enterprise Street, Moncton, N.B., or to Sister Theresa Carmel, St. Joseph's Hospital, Saint John.

1950 C.S.R.T. REGISTRY IN NEXT ISSUE

The Registrar wishes to point out to all members that dues must be paid by February 15th, 1950, in order to get the members' names in the 1950 Registry to be published in the Spring number of The Focal Spot.

Provincial Secretaries are also asked to emphasize this necessity and also to send their lists of paid-up members in to the Registrar promptly after February 15th.

(*Continued from page 7*)

NOVA SCOTIA SOCIETY OF RADIOGRAPHERS

On Wednesday, November 25th, many technicians in Halifax heard a most instructive talk by Dr. C. M. Harlow, on "Renal Calculi." In this talk, our pathologist friend told in concise and simple form, the etiology, the different types of "stone," and methods used in treatment of the condition. It was most interesting to learn the exact nature of these calculi, which are to the x-ray eye merely "opacities" but to the patient sometimes a very painful and disabling ailment. A vote of thanks was moved by Miss Neva Harley, R.T.

On January 18th, a lecture an anatomy will be given by Dr. R. L. Saunders of Dalhousie University. We are extending an invitaton to Laboratory Technicians to attend any lectures of general interest.

—SISTER EDMUND CAMPION, R.T.,
Sub-Editor.

NEW BRUNSWICK SOCIETY OF X-RAY TECHNICIANS

The November meeting of the New Brunswick Society of X-Ray Technicians was held on Saturday evening November 5th, at the East Saint John Tuberculosis Hospital.

Presided over by Mr. Darrell Liston, R.T., the meeting began with a business session. The matter of examination supervsors for C.S.R.T. candidates was given some attention, as well as the matter of suitable accommodation for writing.

Following this discussion came the highlight of the evening, the talk given by Dr. Kirkland, Radiologist at Saint John General Hospital. He dealt with Carcinoma of the Breast. Great interest was shown by all present. Dr. Kirkland also described certain phases of research in cancer in Britain.

Mr. Paul Nadeau, R.T., aided and abetted by Mr. John McNair, R.T., without the benefit of feminine assistance, prepared a lunch of which to be proud. And thus the meeting ended in a social get-together.

—VIRGINIA STEVENS, R.T.,
Sub-Editor.

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ONTARIO SOCIETY OF RADIOGRAPHERS

CENTRAL SECTION

The first meeting of 1950 was held at Sunnybrook Hospital, Toronto, on Saturday evening, January 28th. The meeting was opened with an address by Dr. D. T. Burke, Radiologist in Chief, Sunnybrook Hospital. The speaker was thanked by the Chairman, Mr. Robert McCaw.

Mr. Gordon Higginson then spoke on "Helpful Hints for Gall Bladder Procedures," and we are sure many benefitted from his paper.

Dr. Keevil and Dr. Spence demonstrated, by slides and drawings, the necessity of multiple views of the abdomen when obstruction or free gas is suspected. They stressed the fact that this examination is a real emergency.

The President of the Ontario Society, Mr. John Collins, outlined his interview with the Minister of Labour and later in the meeting Miss A. Hayward and Bob McCaw gave further details by means of a skit. Miss Hayward stressed the need of the executive for more and better co-operation from the technicians on matters of this type.

If you have a questionnaire, fill it in and mail it. If you haven't one or have misplaced the one you did have, write to Miss Hayward and get another one. THIS IS YOUR PROBLEM. DO SOMETHING ABOUT IT.

In a survey, Bob McCaw found that many laboratories did not have or did not use tube rating charts or filament increment charts. With the aid of slides he explained their use and discussed the value of using them.

During the course of the meeting two very interesting color motion pictures were shown, one of the gastrectomy, made at Sunnybrook Hospital, and one of a spine, made by the U.S. Navy. A vote of thanks was tendered to Mr. Frank Hall of the Medical Arts Department at Sunnybrook, who made one of these pictures and was there to show them to us.

Refreshments were then served and tours of the x-ray department were started. Groups of ten were guided by Sunnybrook technicians who explained equipment and procedure. During the tours, Mr. Geo. Barham, of the Fairchild Co., New York, demonstrated a new type Angiogram machine and showed an interesting set of plates that had been made by this machine. This is a new field to most technicians and they were all very interested.

A hearty vote of thanks was expressed to Dr. Desmond Burke for so kindly allowing the use of his department. —MARK TRILLER, R.T.,
Sub-Editor.

WESTERN SECTION

The first meeting for 1950 of the Western Section of the Ontario Society was held on Wednesday evening, February 1st, at St. Joseph's Hospital, London, Ont. There was a very gratifying turnout of some sixty members and we were pleased to note among them ten members from the Central Section, including the President and Secretary of the Ontario Society. These members came from Toronto, Hamilton, St. Catharines and other Ontario points to attend the meeting.

In a short address of welcome the Chairman, Mr. H. L. Thompson, welcomed those present, commenting on the considerable distances some had come. Respectful reference was also made to the recent dealth of Dr. Murray Morrison, Radiologist, who passed away in St. Joseph's Hospital, London, in December. A very outstanding member of his profession and well liked by all who knew him.

The first speaker of the evening was Dr. Paul Hauch, Radiologist in Chief at Westminster Hospital, London, who spoke on "Air Insufflation of the Knee," illustrated with a motion picture and a number of radiographs.

The next speaker was Dr. Keith Falkner, Radiologist to St. Joseph's Hospital, who delivered a fine talk on Radiographic Procedure in Myelography. The doctor has an easy way of speaking which makes for good listening and this item also was well received.

Following Dr. Falkner was Mr. Ed. Fanning of the Ferranti Electric Ltd., who discoursed on Technical Operating Problems or what to do until the service man arrives. Ed. had made a salient list of places in the machine to inspect so that the technician might come up with some tangible idea of what was wrong and advise the service man by phone.

The minutes were flying all too fast and it was fairly late when Dr. A. E. Broome of Kitchener and his technician, Mr. T. Gellaty, Ontario Veterinary College, Guelph, presented their part of the program, "Animal X-Ray Investigation." If you think you have your troubles when radiographing a 250 pounder, how would you like to get a picture of a horse weighing 1,200 lbs., and un-co-operative? Then maybe the next case would be a foetus from a chinchilla weighing less than an ounce. Dr. Broome and Mr. Gellaty showed numerous slides and actual radiographs and everyone found it very unique and interesting. The Doctor's dry wit and humour every once in a while had everyone in a jovial mood. To finish up he showed another facet of his multiple x-ray activities—his hobby of radiographing old paintings for determination of authenticity or faking. This was very interesting too and if "tempus" had not been "fugiting" at such a rate we would still have been there at midnight. However, the meeting had to be adjourned about 11.30, after which the sisters of St. Joseph's provided a very welcome supper.

—LES THOMPSON, R.T.,
Chairman, Western Section, O.S.R.

QUEBEC SOCIETY OF X-RAY TECHNICIANS

The Quebec Society of X-Ray Technicians held its meeting Saturday afternoon, November 26th, 1949, at St. Mary's Hospital. We had a fairly good representation, considering the very cold weather. Also, everyone was concerned about football finals!

We were welcomed by the Mother Superior and Mr. A. J. Chopin, Hospital Superintendent. Miss M. Archambault and Mr. A. Cheffins presided. An English translation of a paper, "Radium and the Technician," prepared by Miss Flora Joyal of Radium Institute, was read by Miss Verna Petrie of the Montreal General Hospital—Western Division. This article will soon appear in The Focal Spot in English as well as in French.

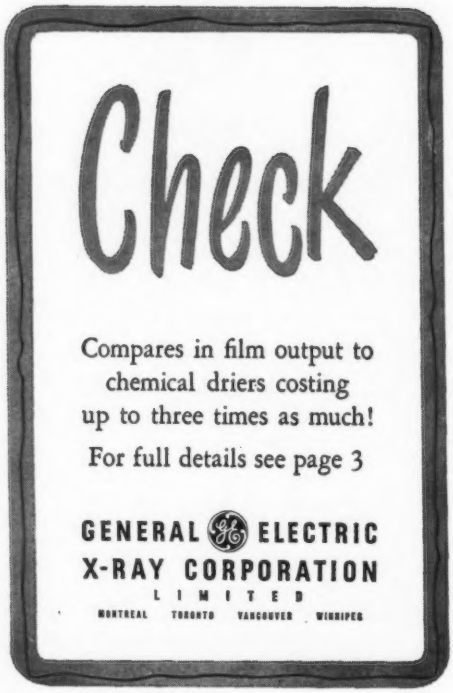
In an effort to create interest for the student and prepare him or her for future papers, it has been decided to have two "ten-minute papers" at each meeting, written and delivered by one English and one French member. The first of these was given by Miss Louise Bergeron of Notre Dame Hospital. She is to be congratulated for the way in which she described and illustrated the procedure for Cerebral Arteriograms.

The remainder of the agenda was devoted to "other business." After the meeting, a sumptuous tea was served by the Sisters of Providence.

Miss Flora Joyal has been appointed to the executive, thereby filling the vacancy created when Sister Marguerite de Jesus left for Belgium.

It gives us considerable pleasure to welcome to our active membership the following successful candidates of the November, 1949, examination:

Miss Barbara Allan, Royal Victoria Hospital, Montreal.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Miss Marie Lucille Adcock, Sherbrooke Hospital, Sherbrooke, Que.

Miss Therese Blain, 418 Jarry St., Montreal.

Miss Margerite Gendron, Hotel Dieu Hospital, Sherbrooke.

Mr. Gordon Greenfield, Homoeopathic Hospital, Montreal.

Mr. Donald Cotton Fisk, Queen Mary Veterans' Hospital, Montreal.

Miss Donalda Morrison, Montreal General Hospital, Western Division, Montreal.

Miss Madeline Yull, Hopital Ste. Croix, Drummondville, Que.

Miss Mary Jeanne Ross, Royal Victoria Hospital, Montreal.

Miss Anita Roberge, Hopital St. Vincent de Paul, Sherbrooke.

Sister St. Bernadin de Siennes, Hotel Dieu, Chicoutimi, Que.

Mr. John Shepley, Grace Dart Hospital, Montreal.

Miss Beverley Walker, 26 Stratford Road, Hampstead, Que.

Miss Gabrielle Banville, Queen Mary Veterans' Hospital, Montreal.

Miss Jeanne Rouleau, Hopital du St. Sacrament, Quebec City, Que.

GEORGE JACKSON CONDUCTS TRAINING CLASSES IN MONTREAL

A special series of classes is being held in Montreal, conducted by Mr. George A. Jackson, R.T., of the Educational Services, Picker X-Ray Co. of Canada. This has never been attempted on such a large scale in Montreal before.

Classes are held every Tuesday evening, from 7.30 to 9.30, at the Queen Mary Veterans' Hospital, from November to February. Classes are open to Students, R.T.'s, Doctors, Junior Radiologists. Average number attending is 40 to 50 persons.

The course is divided into four main sections: 1, Electricity and X-Ray Circuits; 2, X-Ray Tubes and Production of X-Rays; 3, Radiographic Exposure Factors; 4, Photochemical Effects, all of which are dealt with in detail.

Where possible, all parts of equipment under discussion are available to the class to dismantle or examine.

Simple x-ray machines are built by the class and actual radiographs made. A wide variety of x-ray tubes are available for inspection. It was found to be of certain advantage to devote the whole of the lecture time available to discussion and question periods, and at the end of each series, typed notes were given to the students.

Twice a year special tuition classes are held for students writing the C.S.R.T. examinations.

—ROSINA McHARDY, R.T.,
Sub-Editor.

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LA SOCIETEE DES TECHNICIENS EN R.X. DE LA PROVINCE DE QUEBEC

La dernière assemblée de l'année eut lieu le 26 novembre 1949 à l'hopital Ste Mary's.

Avant l'assemblée une carte de souhaits fut signée par le membres présents et adressée a Sr .M. Marguerite de Jesus en Belgique.

La Rev. Sr. Hildegarde, Supérieure de l'hopital, nous souhaita la plus cordiale bienvenue ainsi que le Surintendant M. Chopin.

Miss Petrie lut en anglais le travail sur le Radium rédigé en francais par Mlle Joyal. M. Cheffins remercia Miss Petrie et Mlle Royal.

Mlle Louise Bergeron étudiante à l'hopital Notre-Dame donna un beau travail sur "l'Angiographie Cérébrale, Mlle. Alice Paquin remercia Mlle Bergeron.

Mlle Joyal fut choisi par l'executif pour remplacer Sr. Marguerite de Jesus jusqui'au mois de mai.

La maison Philipps a donné un appareil de radio a la Société des Techniciens en R.X. de la Pro. de Que. Mlle Archambault demande aux membres de suggérer des moyens pour mettre a profit ce cadeau; il, fut proposé soit de procéder à un tirage, ou de le donner comme prix de présence à une partie de carte.

Le vote des membres présents a décidé de faire rafler le radio.

Mr. Burke, représentant de l'assurance groupe Continental Casualty, nous parla des avantages d'une telle assurance; une discution s'en suivi et M. Lewis suggéra de s'informer à d'autres Compagnies pour connaître leurs conditions.

Une lettre de Sr. Marg. de Jesus fut lue par Mlle Archambault, M. Cheffins en fit la traduction en anglais.

Mlle. Archambault informa les étudiants qu'ils receveront leurs cartes de membres au débur de 1950.

Miss Donalda Campbell fut nommée pour visiter les hopitaux ou l'on donne des cours aux Technicient.

Mlle Archambault souligna que les derniers examens ont eu lieu à l'hopital Herbert Reddy Mem. le 4 novembre 1949; à cette occasion le diner fut gracieusement servi atous Mlle Archambault remercie les autorités de l'hopital ainsi que Mlle Germaine Perry.

Mlle la présidente félicite Mlle Bergeron pour son beau travail et invite les étudiants à préparer un travail pour chaque assemblée.

M. Meadus, R.T., du Sanatorium Laurentien de Ste Agathe, nous transmet l'invitation du Dr. Phelps pour une assemblée régulière à Ste Agathe.

M. Picard, étudiant à l'hopital St. Luc, fit remarquer que la traduction francaise des questions des derniers examens n'étaient pas au point et prètaient à confusion.

La prochaine assemblée aura lieu au Queen Mary's Veterans' Hospital le 30 janvier à 8 hrs. p.m.

Il fut suggéré de faire une assemblée sociale pour les religieuses un samedi après midi.

Mlle Archambault présenta ses souhaits de Joyeux Noel et Heureuse Année a tous.

Un délicieux gouter nous fut servi. Mos plus sincère remerciements aux religieuses du Ste Mary's.

—ALICE PAQUIN, R.N., R.T.,
Sub-Editor.

SASKATCHEWAN SOCIETY OF X-RAY TECHNICIANS

REGINA SECTION

The December meeting of the Regina Section was a meeting only in the sense that a good majority of those on the roster met at the Y.W.C.A., enjoying themselves very much at the Annual Christmas Party. With Jas. Connell and his group from the Medical Arts providing songs and humorous skits, D. Penley and J. Logan from Grey Nuns' Hospital giving forth on musical bottles, P. Hunt and Jas. Connell rendering out in duet style, and a general sing-song by everyone—the entertainment was really enjoyed. Not the least enjoyed—certainly the most anticipated—was the delicious lunch as arranged by Miss I. Domes.

With the advent of the New Year, quite a bit of activity has become evident in every respect from pure business to romance.

Chas. Bruce, formerly of Medical Arts Clinic, is now located in the X-Ray Department of the Weyburn Provincial Hospital.

Dan McKinnon, Weyburn, Saskatchewan, is now in a business of his own—photography. Best of luck, Dan!

The X-Ray Department, Grey Nuns' Hospital, is now complete with an assistant Radiologist, Dr. G. McPhee, recently arrived from New York.

Marianne Johnson, formerly of Grey Nuns' Hospital and now located at Sioux Lookout, left Regina for her new position with an engagement ring firmly clutched on her left hand.

New x-ray students in Regina are as follows:

John Logan, from Portage La Prairie, now at Grey Nuns' Hospital.

B. Stiff and Gertrude Schmidt, recently attached to the training class at Medical Arts Clinic.

—DOUGLAS PENLEY, R.T.,
Sub-Editor.

SASKATOON SECTION

The November meeting was held at the Saskatchewan University. The lecturer was Dr. H. E. Johns, Physicist at the University and at the Saskatoon Cancer Clinic. Dr. Johns' subject was "The Betatron." We had heard a lot about this marvellous machine but it was the first time we had had an opportunity to see it and to have it explained to us. Dr. Johns' lecture was very interesting in the matter of general Physics, as well as giving us an idea of the working of the Betatron. We greatly appreciate the fact that such a busy man as Dr. Johns can devote some of his spare time to us; we hope to have the pleasure of hearing him again sometime soon.

Miss May Alldred, the local President, extended the thanks and appreciation of all the members. The number of technicians present was very gratifying, twenty-two answering the roll call.

The December meeting was held at the Saskatoon City Hospital. Twenty members were present. Miss May Alldred acted as Chairman.

Two films on "Digestion" were shown. No Saskatoon technician will be able to say that they have not had the chance to know just what happens when a G.I. is being done. The films were very interesting and educational.

Dr. A. B. MacDonell gave a lecture on microfilm as a means of keeping records. Everyone was interested as we all understand the problem of keeping records and the space our present system takes. Our thanks go to Dr. MacDonell for the valuable time he devoted to us and for the interesting manner in which he brought the subject to our attention.

Refreshments were kindly provided by the hospital management and served by the house technicians. Lively discussions took place over our coffee, so much so that some of us forgot it was getting late.

We also had a few visitors from the Dental Assistants' Association. Mrs. Florence Cooper, Dr. A. Singer's Office, Saskatoon, extended the thanks of her Association for the interesting evening. We hope you will come again, Florence, and bring more Dental Assistants.

The January meeting was held at the Saskatoon Sanatorium. Fifteen members were present. Miss May Alldred acted as Chairman.

A film was shown on "The Urinary Tract."

(*Continued on next page*)

Dr. G. D. Blue lectured on Cystoscopy, Pyolograms and K.U.B.'s. Dr. Blue's lecture was much appreciated, as most of us need to be reminded of the things we must not do and the things we should do when doing this particular part of our duty. Thanks, Dr. Blue, for your kindness to our group.

Mr. Ken McKenzie, General Electric X-Ray Corporation, Saskatoon, lectured on X-Ray Physics. Thanks, Ken, we hope to have the pleasure of hearing you again soon.

Refreshments kindly provided by the management of the Sanatorium and served by the house technicians, made a delicious conclusion. We are looking forward to our next meeting at the Sanatorium. By the way, what do you think was the discussion while enjoying the Sanatorium refreshments? I am certain no one would guess at this time of year . . . plans to raise funds for the Provincial Convention.

Congratulations to the successful C.S.R.T. November candidates:

Mr. C. B. Johnson, D.V.A. Hospital, Saskatoon.

Miss I. Murphy, Dr. Landa's Office, Saskatoon.

Miss B. J. Houghton, Providence Hospital, Moose Jaw.

We have pleasure in welcoming back to our city Miss Isabel Murphy, who has taken the post of technician at Dr. S. Landa's Office. Best wishes to you, Isabel, and this time we hope you will remain with us for good.

The Saskatchewan Society extends its sincere wishes for a happy journey to Miss M. M. Purdey, Union Hospital, Wadena. Miss Purdey is realizing a lifetime desire in visiting the British Isles; she will be leaving Canada in March. Bon Voyage!

We extend our welcome to Miss Elizabeth O'Leary, St. Joseph's Hospital, Estevan. Elizabeth has come from Ontario; we hope she will like Saskatchewan so much that she will remain here.

The following are our recent new members:

Miss I. J. Archer, Union Hospital, Maple Creek.

Miss Margaret Best, Notre Dame Hospital, North Battleford.

Mr. Charles B. Bruce, Medical Arts Clinic, Regina.

Mr. Denis H. Brian, Provincial Hospital, Weyburn.

Miss Myrtle R. Clute, Dr. Inglis' Office, Estevan.

Miss Helena Friesen, Union Hospital, Canora.

Miss Vickie Germen, Notre Dame Hospital, North Battleford.

Mr. Edward G. Kenedy, City Hospital, Saskatoon.

Miss Fernande Préfontaine, Lady Minto Hospital, Melfort.

Miss Dorothy V. Hay left Outlook Union Hospital and is now doing laboratory work at Swift Current Hospital. Our best wishes go with you, Dorothy.

—MARIE PERRON, R.T.,
Secretary-Treasurer.

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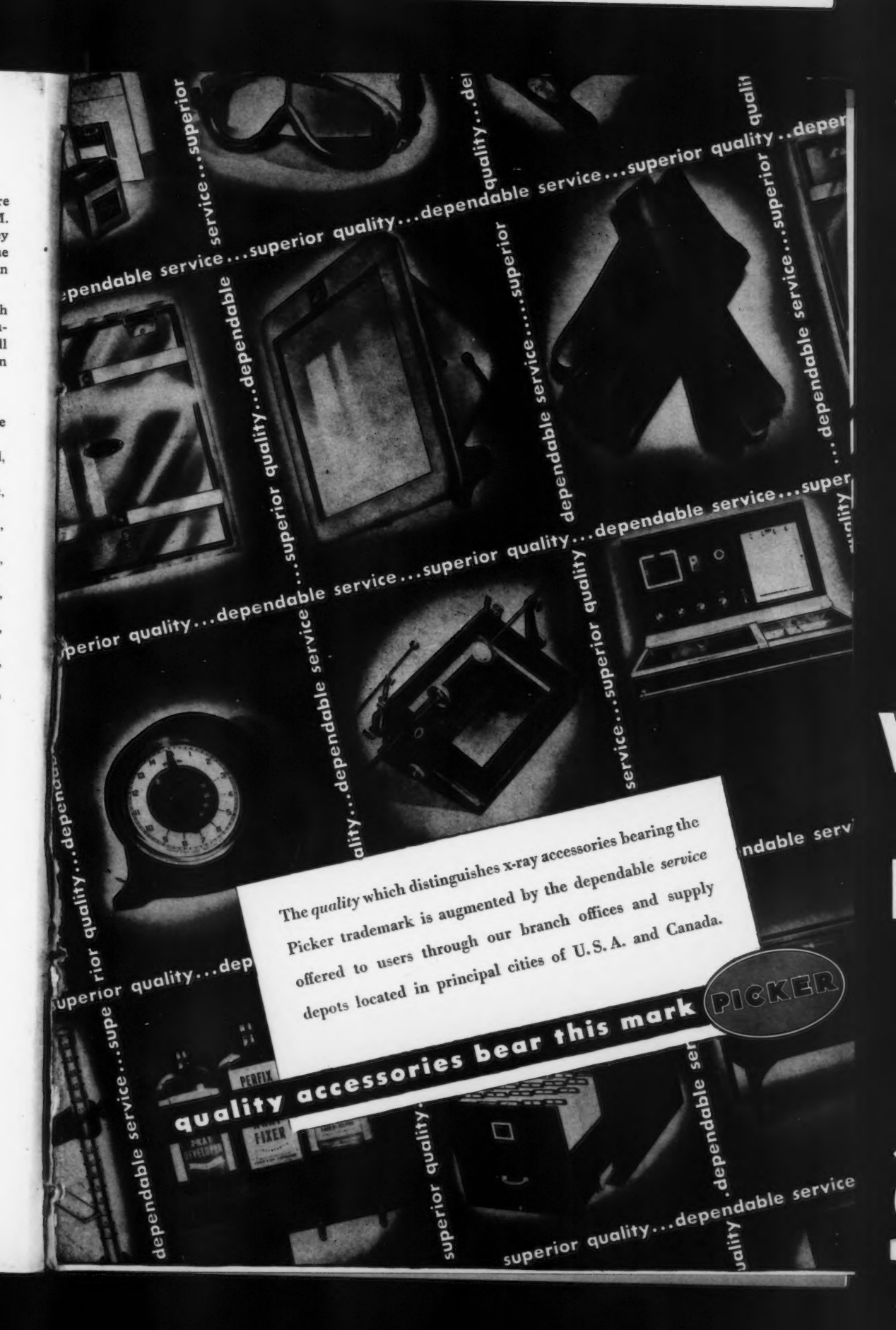
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